WHAT IS CLAIMED IS:

1. A process for preparing a 17-spirolactone steroid compound or a corresponding open lactone salt, the process comprising:

carbonylating a steroid substrate wherein the substrate is substituted at the C-17 position with a first substituent selected from the group consisting of hydroxy and protected hydroxy; and a second substituent selected from the group consisting of alkenyl and alkynyl.

2. A process as set forth in claim 1 wherein the steroid substrate is substituted at the C-17 position with a first substituent comprising a hydroxy group and a second substituent comprising an alkenyl or an alkynyl group.

3. A process as set forth in claim 2 wherein the steroid substrate comprises a 17-alkenyl-17-hydroxy steroid or a 17-alkynyl-17-hydroxy steroid.

4. A process as set forth in claim 3 wherein the process comprises:

reducing the 17-alkynyl group of a 17-alkynyl-17-hydroxy steroid compound to produce a 17-alkenyl-17-hydroxy steroid compound; and

carbonylating the 17-alkenyl-17-hydroxy steroid compound to produce said 17-spirolactone steroid compound.

5. A process as set forth in claim 4 wherein the 17-alkynyl-17-hydroxy steroid compound is contacted with a source of hydrogen to reduce the 17-alkynyl group and yield an intermediate comprising the 17-alkenyl-17-hydroxy steroid compound; and

the 17-alkenyl-17-hydroxy steroid compound is contacted with a source of carbon monoxide and a carbonylation catalyst to yield the 17-spirolactone product.

6. A process as set forth in claim 5 wherein the 17-alkynyl group is reduced in the presence of a catalyst.

7. A process as set forth in claim 1 wherein the process comprises:

carbonylating a 17-alkynyl-17-hydroxy steroid compound to produce a steroid intermediate comprising a 17-lactenone steroid compound; and

reducing the 17-lactenone steroid compound to produce a 17-spirolactone steroid compound.

8. A process as set forth in claim 7 wherein the process comprises contacting the 17-alkynyl-17-hydroxy steroid compound with a source of carbon monoxide and a carbonylation catalyst to yield the intermediate comprising the 17-lactenone steroid compound; and

contacting the 17-lactenone steroid compound with a source of hydrogen to reduce the 17-lactenone group to yield the 17-spirolactone steroid product.

9. A process as set forth in claim 8 wherein the 17-lactenone steroid compound is reduced in the presence of a catalyst.

10. A process as set forth in claim 1 wherein the carbonylation catalyst is formed by contacting a source of a metal with a source of carbon monoxide.

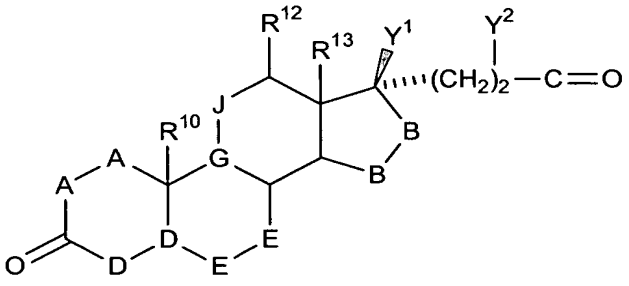
11. A process as set forth in claim 10 wherein the carbonylation catalyst is formed by contacting a source of metal with a source of carbon monoxide in the presence of a ligand.

12. A process as set forth in claim 10 wherein the carbonylation catalyst is formed in the presence of a reducing agent.

13. A process as set forth in claim 10 wherein the carbonylation catalyst is formed *in situ* in the carbonylation reaction medium.

14. A process as set forth in claim 10 wherein the carbonylation catalyst comprises a metal selected from the group consisting of Co, Ni, Fe, Pt, Pd, Ru, Rh, Ir and mixtures thereof.

15. A process for the preparation of a compound corresponding to the Formula 1503:



1503

wherein

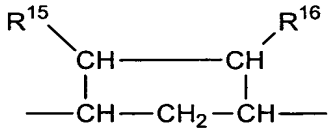
Y^1 and Y^2 together represent the oxygen bridge —O— or Y^1 represents hydroxy and Y^2 represents hydroxy alkoxy or O^- $M^{(+)}$ is a monovalent cation or the combination of a polyvalent cation and another anion.

R^{10}, R^{12} and R^{13} are independently selected from the group consisting of hydrogen, halo, haloalkyl, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^1 and R^2 together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

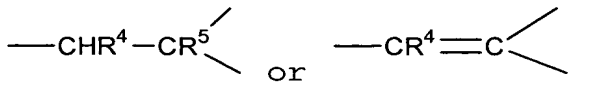
-B-B- represents the group $-CHR^{15}-CHR^{16}-$,$-CR^{15}=CR^{16}-$ or an α- or β-oriented group:



where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucelus to which R^{15} and R^{16} are respectively attached, form a cycloalkylene group:

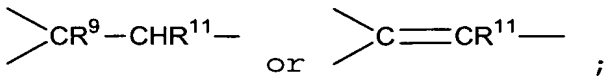
-D-D- represents the group



where R^4 and R^5 are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with

the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group

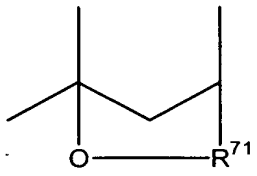


where R^9 and R^{11} are independently selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^9 and R^{11} together form an epoxy group;

-E-E- represents the group $-CHR^6-CHR^7-$ or $-CR^6=CR^7-$, wherein R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy, and R^7 is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, heteroaryl, heterocyclyl, acetylthio, furyl and substituted furyl;

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which R^6 and R^7 are respectively attached, form a (saturated) cycloalkylene group;

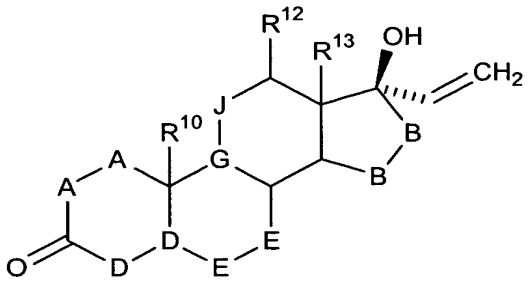
or R^5 and R^7, together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



wherein R^{71} comprises =CH(OH), =CH(OR^{72}) or =CH=O,

the process comprising:

carbonylating a 17-vinyl-17-hydroxy steroid compound of Formula 1502:

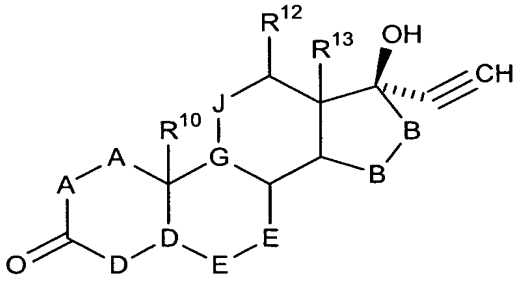


1502

wherein R^{10}, R^{12}, R^{13}, -A-A-, -B-B-, -D-D-, -G-J- and -E-E- are as defined above.

16. A process as set forth in claim 15 wherein the process further comprises:

preparing the compound of Formula 1502 by reducing the 17-ethynyl group of a compound of Formula 1501 to a 17-vinyl group, said compound of Formula 1501 having the structure:



1501

where the substituents R^{10}, R^{12}, R^{13}, -A-A-, -B-B-, -D-D-, -G-J- and -E-E- are as defined above in Formula 1503.

17. A process as set forth in claim 16 wherein said compound of Formula 1501 is contacted with a source of hydrogen in a hydrogenation reaction zone, thereby reducing

the 17-ethynyl group and yielding an intermediate comprising the 17-vinyl compound corresponding to Formula 1502; and

the derivative of Formula 1502 is contacted with a source of carbon monoxide and a carbonylation catalyst in a carbonylation reaction zone to yield the product of Formula 1503.

18. A process as set forth in claim 17 wherein said compound of Formula 1501 is contacted with a source of hydrogen in the presence of a catalyst.

19. A process as set forth in claim 17 wherein said intermediate derivative of Formula 1502 is removed from said hydrogenation reaction zone and transferred to said carbonylation reaction zone.

20. A process as set forth in claim 18 wherein said compound of Formula 1501 is simultaneously contacted with a source of hydrogen, a source of carbon monoxide and a catalyst system effective for reducing the 17-ethynyl group of the compound of Formula 1501 to a 17-vinyl group and for carbonylating the resulting derivative of Formula 1502 *in situ* to convert the 17-hydroxy-17-vinyl structure thereof to a 17-spirobutyrolactone structure.

21. A process as set forth in claim 18 wherein the hydrogenation reaction is conducted in the presence of an alkene or cycloalkene.

22. A process as set forth in claim 21 wherein said alkene or cycloalkene functions as a solvent for said compound of Formula 1501.

23. A process as set forth in claim 22 wherein said alkene or cycloalkene further functions as a solvent for said compound of Formula 1502.

24. A process as set forth in claim 18 wherein said compound of Formula 1501 is simultaneously contacted with a source of hydrogen, a source of carbon monoxide and a catalyst system effective for reducing the 17-ethynyl group of the compound of Formula 1501 to a 17-vinyl group and for carbonylating the resulting derivative of Formula 1502 *in situ* to convert the 17-hydroxy-17-vinyl structure thereof to a 17-spirobutyrolactone structure and said alkene or cycloalkene functions as a solvent for the product compound of Formula 1503.

25. A process as set forth in claim 15 wherein the 17-ethynyl group is reduced to a 17-vinyl group in a hydrogenation reaction zone in the presence of a sacrificial hydrogenation target, thereby inhibiting the hydrogenation of the 17-vinyl group to a 17-ethyl group.

26. A process as set forth in claim 16 wherein reduction of said 17-ethynyl group comprises contacting said compound of Formula 1501 with a source of hydrogen in the presence of a noble metal catalyst.

27. A process as set forth in claim 26 wherein the catalyst comprises Pd on a calcium carbonate support.

28. A process as set forth in claim 16 wherein hydrogenation of said 17-ethynyl group is conducted at a temperature of from about 0° to about 100°C.

29. A process as set forth in claim 28 wherein said hydrogenation is conducted a temperature of from about 25° to about 75°C.

30. A process as set forth in claim 16 wherein hydrogenation of said 17-ethynyl group is conducted at a pressure of from about 0 to about 100 psig.

31. A process as set forth in claim 30 wherein said hydrogenation is conducted at a pressure of from about 25 to about 50 psig.

32. A process as set forth in claim 15 in which said carbonylation catalyst is formed by contacting a source of a metal with a source of carbon monoxide.

33. A process as set forth in claim 32 wherein the carbonylation catalyst is formed by contacting the a source of metal with a source of carbon monoxide in the presence of a ligand.

34. A process as set forth in claim 32 wherein the carbonylation catalyst is formed in the presence of a reducing agent.

35. A process as set forth in claim 32 wherein the carbonylation catalyst is formed *in situ* in the carbonylation reaction medium.

36. A process as set forth in claim 32 wherein the carbonylation catalyst comprises a metal selected from the

group consisting of Co, Ni, Fe, Pt, Pd, Ru, Rh, Ir and mixtures thereof.

37. A process as set forth in claim 34 wherein said carbonylation catalyst is formed by contacting a source of Pd, a ligand and a reducing agent.

38. A process as set forth in claim 3 wherein the ligand comprises phosphorus.

39. A process as set forth in claim 34 wherein the reducing agent comprises an active hydrogen source.

40. A process as set forth in claim 39 wherein the reducing agent is selected from the group consisting of hydrogen, formic acid, borohydrides and oxalic acid.

41. A process as set forth in claim 40 wherein the reducing agent comprises formic acid.

42. A process as set forth in claim 15 wherein said intermediate of Formula 1502 is contacted with carbon monoxide at a temperature of from about 80° to about 150°C.

43. A process as set forth in claim 42 wherein said intermediate of Formula 1502 is contacted with carbon monoxide at a temperature of from about 100° to about 105°C.

44. A process as set forth in claim 16 comprising:

contacting said compound of Formula 1501 with a source of hydrogen and a hydrogenation catalyst in a liquid reaction medium comprising a solvent, thereby producing a

hydrogenation reaction mixture comprising a hydrogenation reaction solution comprising said intermediate of Formula 1502 in said solvent; and

mixing said hydrogenation reaction solution or a concentrate thereof with water to produce a liquid crystallization medium in which the solubility of said compound of Formula 1502 is lower than the solubility thereof in said solvent alone; and

crystallizing said compound of Formula 1502.

45. A process as set forth in claim 4 wherein said hydrogenation reaction solution or concentrate thereof is filtered for removal of catalyst prior to mixing thereof with water.

46. A process as set forth in claim 15 in which said compound of Formula 1502 is contacted with a source of carbon monoxide and a carbonylation catalyst in a liquid reaction medium comprising a solvent for the compound of Formula 1502, thereby producing a carbonylation reaction mixture comprising a carbonylation reaction solution comprising said compound of Formula 1503.

47. A process as set forth in claim 46 wherein said product of Formula 1501 is recovered from a final crystallization medium comprising said carbonylation reaction solution or derived therefrom.

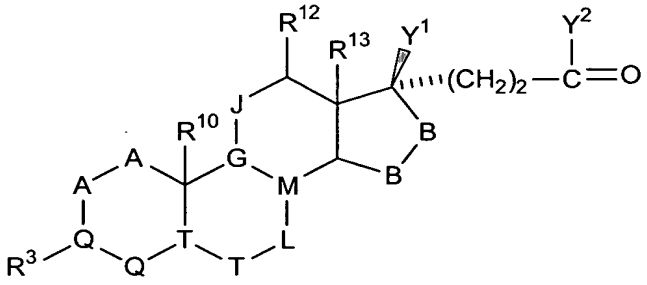
48. A process as set forth in claim 47 wherein said carbonylation reaction solution is mixed with a solvent that is miscible with the liquid reaction medium but in which the solubility of said compound of Formula 1503 is lower than it is in the liquid reaction medium, resulting

in crystallization of said compound of Formula 1503 from the resulting crystallization medium.

49. A process as set forth in claim 47 wherein, prior to crystallization of said compound of Formula 1503, said carbonylation reaction solution or a concentrate thereof is filtered for removal of any solids contained therein.

50. A process as set forth in claim 49 wherein solids removed by filtration from said carbonylation reaction solution or concentrate thereof are washed with a solvent which is combined with the filtrate prior to crystallization.

51. A process for the preparation of a compound corresponding to the Formula 2503:



2503

wherein

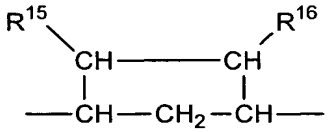
R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

R^{10}, R^{12} and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^1 and R^2 together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

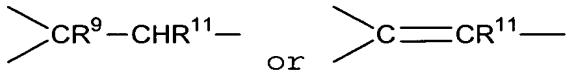
-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}-$ or an α- or β-oriented group:



where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

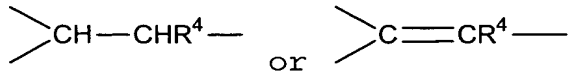
-G-J- represents the group



;

where R^9 and R^{11} are independently selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

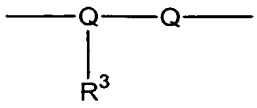
-Q-Q- represents the group



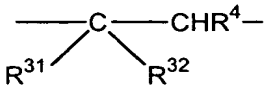
;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl,

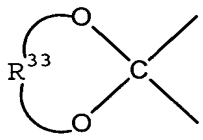
hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; or



together represent the group

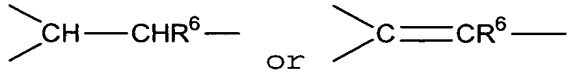


where R^{31} and R^{32} are independently selected from the group consisting of hydroxy and alkoxy, or R^{31}, R^{32} and the C-3 carbon of the steroid nucleus to which they are attached form the group



where R^{33} ia alkylene.

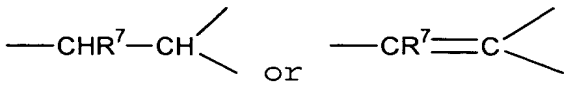
-T-T- represents the group



;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

-L-M- represents the group

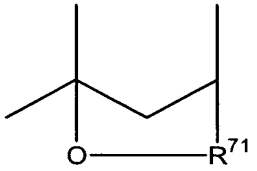


;

where R^7 is selected from the group consisting of hydrogen, halo, hydroxy, protected hydroxy, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, heteroaryl, heterocyclyl, acetylthio, furyl and substituted furyl;

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

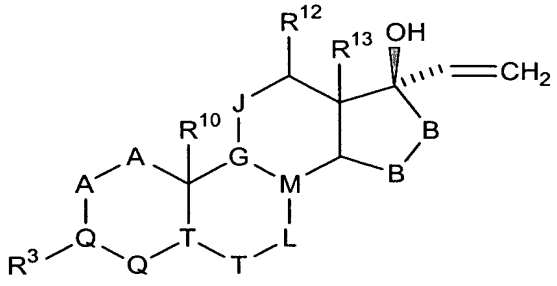
or R^5 and R^7, together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



wherein R^{71} comprises =CH(OH), =CH(OR^{72}) or =CH=O,

the process comprising:

carbonylating a 17-vinyl-17-hydroxy steroid compound of Formula 2502:

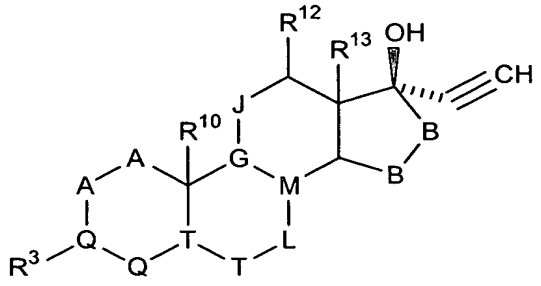


2502

where the substituents R^3, R^{10}, R^{12}, R^{13}, -A-A-, -B-B-, -G-J-, -Q-Q-, -T-T- and -L-M- are as defined in Formula 2503.

52. A process as set forth in claim 51, wherein the process further comprises:

preparing the compound of Formula 2502 by reducing the 17-ethynyl group of a compound of Formula 2501 to a 17-vinyl group, said compound of Formula 2501 having the structure:



2501

where the substituents R^3, R^{10}, R^{12}, R^{13}, -A-A-, -B-B-, -G-J-, -Q-Q-, -T-T- and -L-M- are as defined above in Formula 2503.

53. A process as set forth in claim 51 wherein said compound of Formula 2501 is contacted with a source of hydrogen in a hydrogenation reaction zone, thereby reducing the 17-ethynyl group and yielding an intermediate comprising the 17-vinyl compound corresponding to Formula 2502; and

the derivative of Formula 2502 is contacted with a source of carbon monoxide and a carbonylation catalyst in a carbonylation reaction zone to yield the product of Formula 2503.

54. A process as set forth in claim 52 wherein said compound of Formula 2501 is contacted with a source of hydrogen in the presence of a catalyst.

55. A process as set forth in claim 53 wherein said intermediate derivative of Formula 2502 is removed from

said hydrogenation reaction zone and transferred to said carbonylation reaction zone.

56. A process as set forth in claim 53 wherein said compound of Formula 2501 is simultaneously contacted with a source of hydrogen, a source of carbon monoxide and a catalyst system effective for reducing the 17-ethynyl group of the compound of Formula 2501 to a 17-vinyl group and for carbonylating the resulting derivative of Formula 2502 *in situ* to convert the 17-hydroxy-17-vinyl structure thereof to a 17-spirobutyrolactone structure.

57. A process as set forth in claim 53 wherein the hydrogenation reaction is conducted in the presence of an alkene or cycloalkene.

58. A process as set forth in claim 57 wherein said alkene or cycloalkene function as a solvent for said compound of Formula 2501.

59. A process as set forth in claim 58 wherein said alkene or cycloalkene further functions as a solvent for said compound of Formula 2502.

60. A process as set forth in claim 57 wherein said compound of Formula 2501 is simultaneously contacted with a source of hydrogen, a source of carbon monoxide and a catalyst system effective for reducing the 17-ethynyl group of the compound of Formula 2501 to a 17-vinyl group and for carbonylating the resulting derivative of Formula 2502 *in situ* to convert the 17-hydroxy-17-vinyl structure thereof to a 17-spirobutyrolactone structure; and said alkene or

cycloalkene functions as a solvent for the product compound of Formula 2503.

61. A process as set forth in claim 53 wherein the 17-ethynyl group is reduced to a 17-vinyl group in a hydrogenation reaction zone in the presence of a sacrificial hydrogenation target, thereby inhibiting the hydrogenation of the 17-vinyl group to a 17-ethyl group.

62. A process as set forth in claim 53 wherein reduction of said 17-ethynyl group comprises contacting said compound of Formula 2501 with a source of hydrogen in the presence of a noble metal catalyst.

63. A process as set forth in claim 62 wherein the catalyst comprises Pd on a calcium carbonate support.

64. A process as set forth in claim 52 wherein hydrogenation of said 17-ethynyl group is conducted at a temperature of from about 0° to about 100°C.

65. A process as set forth in claim 64 wherein said hydrogenation is conducted a temperature of from about 25° to about 75°C.

66. A process as set forth in claims 52 wherein hydrogenation of said 17-ethynyl group is conducted at a pressure of from about 0 to about 100 psig.

67. A process as set forth in claim 66 wherein said hydrogenation is conducted at a pressure of from about 25 to about 50 psig.

68. A process as set forth in claim 67 wherein the hydrogenation reaction is conducted in a solvent comprising a lower alcohol selected from the group consisting of methanol, ethanol and isopropanol.

69. A process as set forth in claim 51 in which said carbonylation catalyst is formed by contacting a source of a metal with a source of carbon monoxide.

70. A process as set forth in claim 69 wherein the carbonylation catalyst is formed by contacting the source of metal with a source of carbon monoxide in the presence of a ligand.

71. A process as set forth in claim 69 wherein the carbonylation catalyst is formed in the presence of a reducing agent.

72. A process as set forth in claim 69 wherein the carbonylation catalyst is formed *in situ* in the carbonylation reaction medium.

73. A process as set forth in claim 69 wherein the carbonylation catalyst comprises a metal selected from the group consisting of Co, Ni, Fe, Pt, Pd, Ru, Rh, Ir and mixtures thereof.

74. A process as set forth in claim 71 wherein said carbonylation catalyst is formed by contacting a source of Pd, a ligand and a reducing agent.

75. A process as set forth in claim 71 wherein the ligand comprises phosphorus.

76. A process as set forth in claim 70 wherein the reducing agent comprises an active hydrogen source.

77. A process as set forth in claim 76 wherein the reducing agent is selected from the group consisting of hydrogen, formic acid, borohydrides and oxalic acid.

78. A process as set forth in claim 77 wherein the reducing agent comprises formic acid.

79. A process as set forth in claim 51 wherein said intermediate of Formula 2502 is contacted with carbon monoxide at a temperature of from about 80° to about 150°C.

80. A process as set forth in claim 79 wherein said intermediate of Formula 2502 is contacted with carbon monoxide at a temperature of from about 100° to about 105°C.

81. A process as set forth in claim 52 comprising:

contacting said compound of Formula 2501 with a source of hydrogen and a hydrogenation catalyst in a liquid reaction medium comprising a solvent, thereby producing a hydrogenation reaction mixture comprising a hydrogenation reaction solution comprising said intermediate of Formula 2502 in said solvent; and

mixing said hydrogenation reaction solution or a concentrate thereof with water to produce a liquid crystallization medium in which the solubility of said compound of Formula 2502 is lower than the solubility thereof in said solvent alone; and

crystallizing said compound of Formula 2502.

82. A process as set forth in claim 81 wherein said hydrogenation reaction solution or concentrate thereof is filtered for removal of catalyst prior to mixing thereof with water.

83. A process as set forth in claim 51 in which said compound of Formula 2502 is contacted with a source of carbon monoxide and a carbonylation catalyst in a liquid reaction medium comprising a solvent for the compound of Formula 2502, thereby producing a carbonylation reaction mixture comprising a carbonylation reaction solution comprising said compound of Formula 2503.

84. A process as set forth in claim 83 wherein said product of Formula 2503 is recovered from a final crystallization medium comprising said carbonylation reaction solution or derived therefrom.

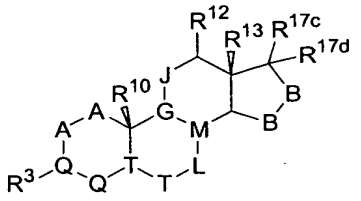
85. A process as set forth in claim 84 wherein said carbonylation reaction solution is mixed with a solvent that is miscible with the liquid reaction medium but in which the solubility of said compound of Formula 2501 is lower than it is in the liquid reaction medium, resulting in crystallization of said compound of Formula 2501 from the resulting crystallization medium.

86. A process as set forth in claim 84 wherein, prior to crystallization of said compound of Formula 2501, said carbonylation reaction solution or a concentrate thereof is filtered for removal of any solids contained therein.

87. A process as set forth in claim 86 wherein solids removed by filtration from said carbonylation reaction

solution or concentrate thereof are washed with a solvent which is combined with the filtrate prior to crystallization.

88. A compound of Formula XXII:



XXII

wherein:

R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl;

R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

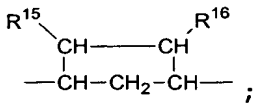
R^{17c} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17d} is alkenyl;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$ or an α- or β-oriented group:



;

where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

-G-J- represents the group $>C=CR^{11}-$;

where R^{11} is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-Q-Q- represents the group $>C=CR^{4}-$;

where R^{4} is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

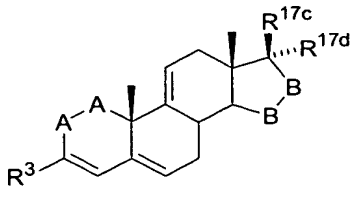
-T-T- represents the group $>C=CR^{6}-$;

where R^{6} is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

-L-M- represents the group $-CHR^{7}-CH<$;

where R^{7} is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl.

89. A compound according to claim 88 corresponding to Formula XXIIA:



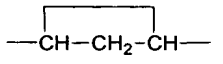
XXIIA

wherein

-A-A- represents the group $-CH_2-CH_2-$ or -CH=CH-;

R^3 is lower alkoxy;

-B-B- represents the group $-CH_2-CH_2-$ or an α- or β-oriented group:

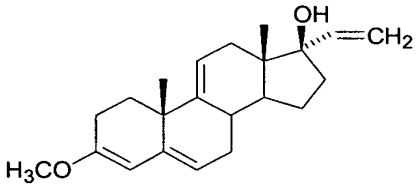


;

R^{17a} is hydroxy or protected hydroxy; and

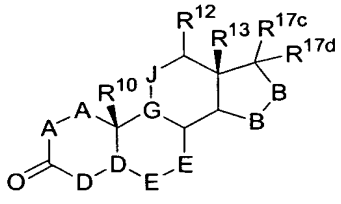
R^{17b} is alkenyl.

90. A compound according to claim 89 corresponding to Formula A:



.

91. A compound of Formula XXV:



XXV

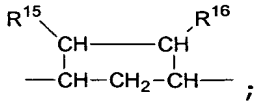
wherein:

R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

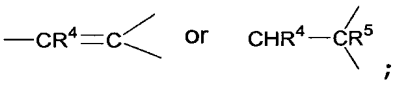
-B-B- represents the group $-CHR^{15}-CHR^{16}-$ or an α- or β-oriented group:



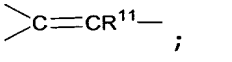
where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

R^{17c} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17d} is alkenyl;

-D-D- represents the group  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group  ;

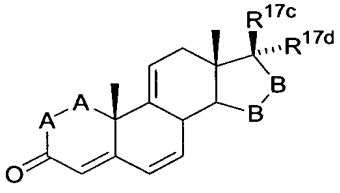
where R^{11} is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-E-E- represents the group $-CR^6=CR^7-$ or $-CHR^6-CHR^7-$;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

R^7 is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl.

92. A compound according to claim 91 corresponding to Formula XXVA:

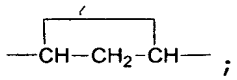


XXVA

wherein

-A-A- represents the group $-CH_2-CH_2-$ or -CH=CH-;

-B-B- represents the group $-CH_2-CH_2-$ or an α- or β-oriented group:

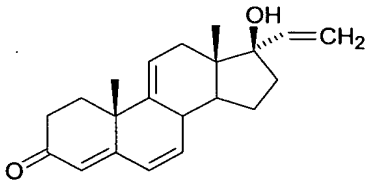


;

R^{17c} is hydroxy or protected hydroxy; and

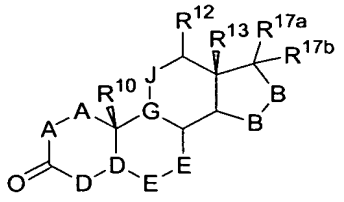
R^{17d} is alkenyl.

93. A compound according to claim 92 corresponding to Formula B:



.

94. A compound of Formula XXIV:



XXIV

R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

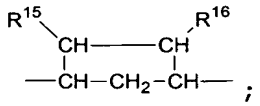
R^{17a} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17b} is alkynyl;

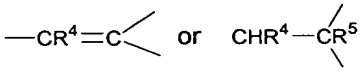
-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$ or an α- or β-oriented group:

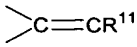


where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

-D-D- represents the group  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with the carbons of

the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group  ;

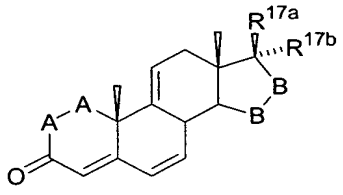
where R^{11} is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-E-E- represents the group $-CR^6=CR^7-$;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

R^7 is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl.

95. A compound according to claim 94 corresponding to Formula XXIVA:

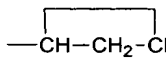


XXIVA

wherein:

-A-A- represents the group $-CH_2-CH_2-$ or -CH=CH-;

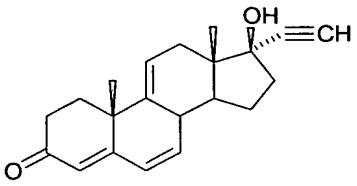
-B-B- represents the group $-CH_2-CH_2-$ or an α- or β-oriented group:

 ;

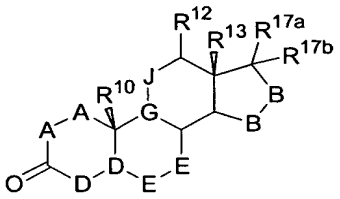
R^{17a} is hydroxy or protected hydroxy; and

R^{17b} is alkynyl.

96. A compound according to claim 95 corresponding to Formula C:



97. A compound of Formula XXVI:



XXVI

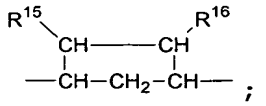
wherein:

R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$ or an α- or β-oriented group:



;

where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

R^{17a} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17b} is alkynyl;

-D-D- represents the group $-CR^4=C<$;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group $>C=CR^{11}-$;

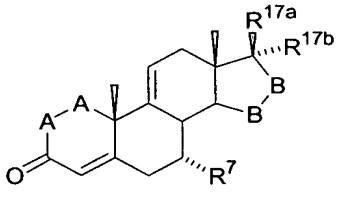
where R^{11} is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

-E-E- represents the group $-CR^6=CR^7-$ or $-CHR^6-CHR^7-$;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

R^7 is selected from the group consisting of acetylthio, furyl and substituted furyl.

98. A compound according to claim 97 corresponding to Formula XXVIA:

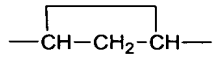


XXVIA

wherein:

-A-A- represents the group $-CH_2-CH_2-$ or $-CH=CH-$;

-B-B- represents the group $-CH_2-CH_2-$ or an α- or β-oriented group:



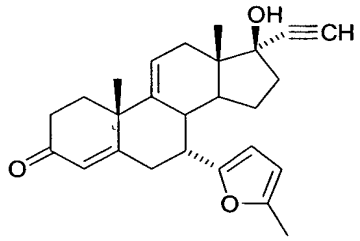
;

R^7 is selected from the group consisting of hydrogen, furyl, and alkylfuryl;

R^{17a} is hydroxy or protected hydroxy; and

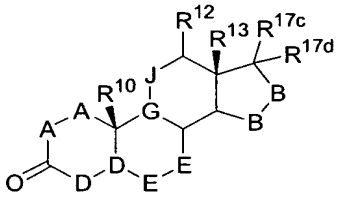
R^{17b} is alkynyl.

99. A compound according to claim 98 corresponding to Formula D:



.

100. A compound of Formula XXVII:



XXVII

wherein:

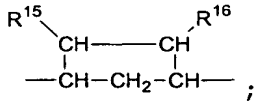
R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together

with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

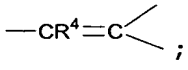
-B-B- represents the group $-CHR^{15}-CHR^{16}-$ or an α- or β-oriented group:



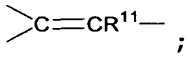
where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

R^{17c} is selected from the group consisting of hydroxy, protected hydroxy; and

R^{17d} is alkenyl;

-D-D- represents the group  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group  ;

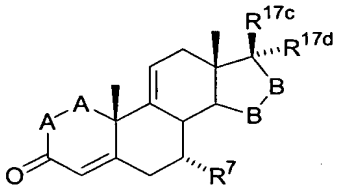
where R^{11} is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

-E-E- represents the group $-CR^6=CR^7-$ or $-CHR^6-CHR^7-$;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

R^7 is selected from the group consisting of acetylthio, furyl and substituted furyl.

101. A compound according to claim 100 corresponding to Formula XXVIIA:

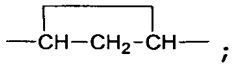


XXVIIA

wherein

-A-A- represents the group $-CH_2-CH_2-$ or $-CH=CH-$;

-B-B- represents the group $-CH_2-CH_2-$ or an α- or β-oriented group:



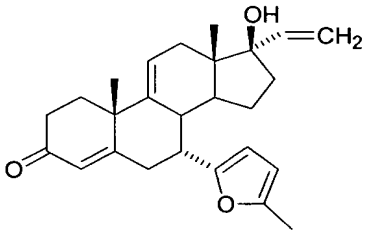
;

R^7 is selected from the group consisting of hydrogen, furyl, and alkylfuryl;

R^{17c} is hydroxy or protected hydroxy; and

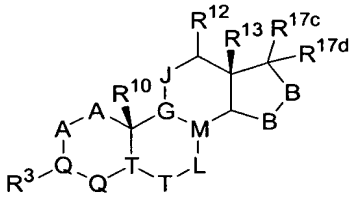
R^{17d} is alkenyl.

102. A compound according to claim 101 corresponding to Formula E:



.

103. A process for the preparation of a compound of Formula XXII:



XXII

wherein:

R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl; dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-hetero-cyclyl;

R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

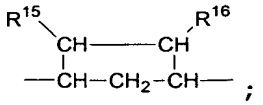
R^{17c} is selected from the group consisting of hydroxy and protected hydroxy;

R^{17d} is alkenyl;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

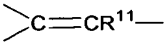
-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}-$ or an α- or β-oriented group:



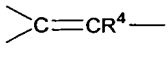
;

where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

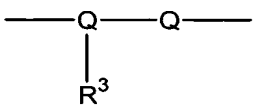
or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are attached, form a (saturated) cycloakylene group;

-G-J- represents the group  ;

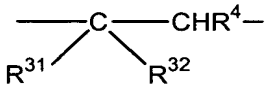
where R^{11} is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

-Q-Q- represents the group  ;

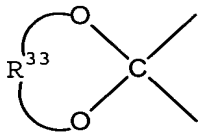
where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; or



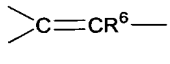
together represent the group



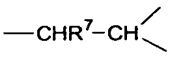
where R^{31} and R^{32} are independently selected from the group consisting of hydroxy and alkoxy, or R^{31}, R^{32} and the C-3 carbon of the steroid nucleus to which they are attached from the group



where R^{33} is alkylene.

-T-T- represents the group  ;

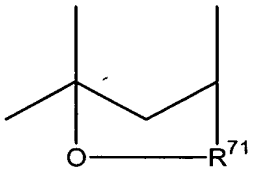
where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

-L-M- represents the group  ;

where R^7 is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl;

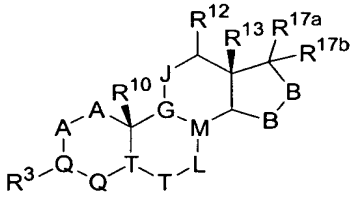
or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are attached, form a (saturated) cycloalkylene group;

or R^5 and R^7, together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



wherein R^{71} comprises =CH(OH), =CH(OR^{72}) or =CH=O,

the process comprising reducing the 17-alkynyl group of a compound of Formula XXI, said compound of Formula XXI having the structure:



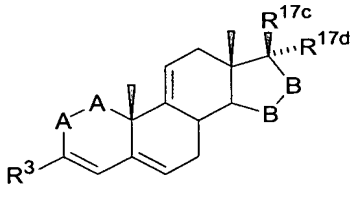
XXI

wherein R^{3}, R^{10}, R^{12}, R^{13} , -A-A-, -B-B-, -G-J-, -Q-Q-, -T-T-, and -L-M- are as defined above, and R^{17a} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17b} is alkynyl.

104. A process as set forth in claim 103 comprising contacting said compound of Formula XXI with a source of hydrogen.

105. The process of claim 102 wherein said compound of Formula XXII is a compound of Formula XXIIA:



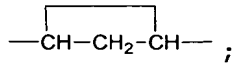
XXIIA

wherein

-A-A- represents the group $-CH_2-CH_2-$ or -CH=CH-;

R^3 is lower alkoxy;

-B-B- represents the group $-CH_2-CH_2-$, $-CR^{15}=CR^{16}-$ or an α- or β-oriented group:

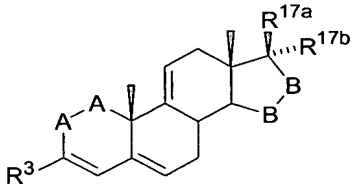


;

R^{17c} is hydroxy or protected hydroxy; and

R^{17d} is alkenyl;

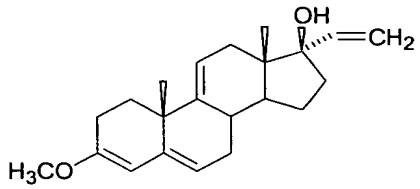
the process comprising contacting a source of hydrogen in the presence of a catalyst with a compound of Formula XXIA:



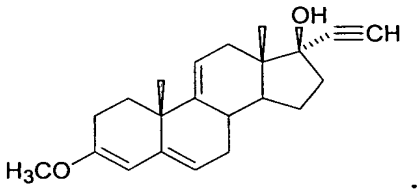
XXIA

wherein -A-A-, R^3, -B-B-, and R^{17a} are as defined above, and R^{17b} is alkynyl.

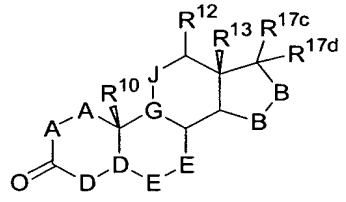
106. The process of claim 105 wherein said compound of Formula XXIIA is:



and the compound of Formula XXIA is:



107. A process for the preparation of a compound of Formula XXV:



XXV

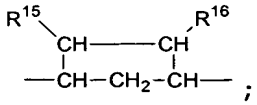
wherein:

R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}-$ or an α- or β-oriented group:

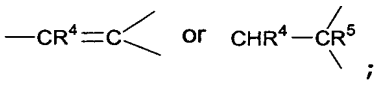


where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

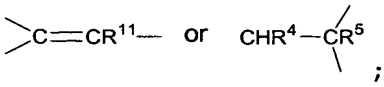
or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are attached, form a (saturated) cycloalkylene group;

R^{17c} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17d} is alkenyl;

-D-D- represents the group  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group  ;

where R^{11} is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

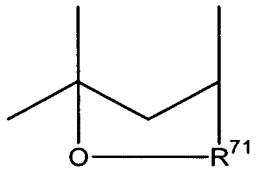
-E-E- represents the group $-CR^6=CR^7-$ or $-CHR^6-CHR^7-$;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

R^7 is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl;

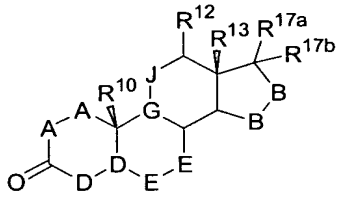
or R^6 and R^7, together with the C-6 and C-7 carbons of the steriod nucleus to which they are attached, form a (saturated) cycloalkylene group;

or R^5 and R^7, together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



wherein R^{71} comprises =CH(OH), =CH(OR^{72}) or =CH=O,

the process comprising reducing the 17-alkynyl group of a compound of Formula XXIV with a source of hydrogen, said compound of Formula XXIV having the structure:

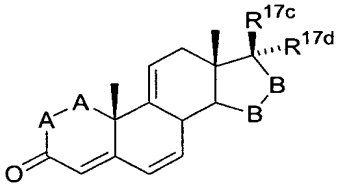


XXIV

wherein R^{10}, R^{12}, R^{13}, -A-A-, -B-B-, -D-D-, -G-J-, and -E-E- are as defined above; R^{17a} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17b} is alkynyl.

108. The process of claim 107 wherein said compound of Formula XXV is a compound of Formula XXVA:

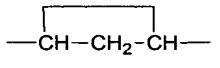


XXVA

wherein

-A-A- represents the group $-CH_2-CH_2-$ or -CH=CH-;

-B-B- represents the group $-CH_2-CH_2-$ or an α- or β-oriented group:

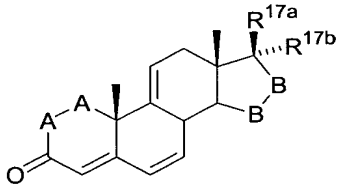


;

R^{17c} is hydroxy or protected hydroxy; and

R^{17d} is alkenyl;

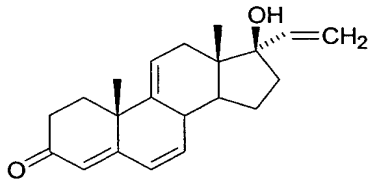
the process comprising contacting a source of hydrogen in the presence of a catalyst with a compound of Formula XXIVA:



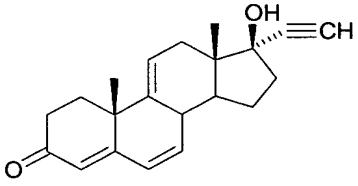
XXIVA

wherein -A-A- and -B-B- are as defined above; R^{17a} is hydroxy or protected hydroxy; and R^{17b} is alkynyl.

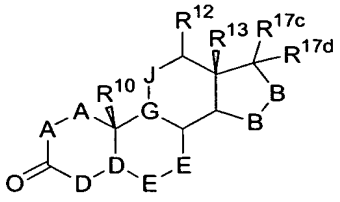
109. The process of claim 108 wherein said compound of Formula XXVA is:



and the compound of Formula XXIVA is:



110. A process for the preparation of a compound of Formula XXVII:



XXVII

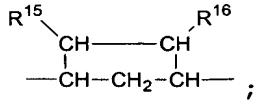
wherein:

R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}-$ or an α- or β-oriented group:

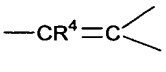


where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

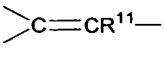
or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are attached, form a cycloalkeylene group;

R^{17c} is selected from the group consisting of hydroxy and protected hydroxy, and

R^{17d} is alkenyl;

-D-D- represents the group  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group  ;

where R^{11} is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

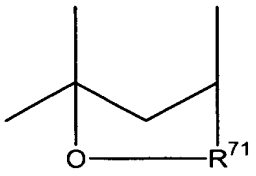
-E-E- represents the group $-CR^6=CR^7-$ or $-CHR^6-CHR^7-$;

R^6 is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy;

where R^7 is selected from the group consisting of furyl, substituted furyl or acetylthio;

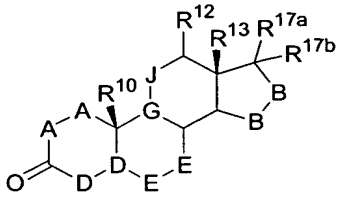
or R^6 and R^7 together with the C-6 and C-7 carbons of the steroid nucleus to which they are attached, form a (saturated) cycloalkylene group;

or R^5 and R^7, together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



wherein R^{71} comprises =CH(OH), =CH(OR^{72}) or =CH=O,

the process comprising contacting a compound of Formula XXVI with a reducing agent, said compound of Formula XXVI having the structure:



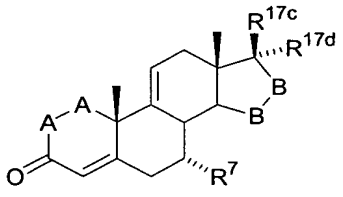
XXVI

wherein R^{10}, R^{12}, R^{13}, -A-A-, -B-B-, -D-D-, -G-J-, and -E-E- are as defined above;

R^{17a} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17b} is alkynyl.

111. The process of claim 110 wherein said compound of Formula XXVII is a compound of Formula XXVIIA:

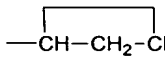


XXVIIA

wherein

-A-A- represents the group $-CH_2-CH_2-$ or -CH=CH-;

-B-B- represents the group $-CH_2-CH_2-$, $-CR^{15}=CR^{16}$ or an α- or β-oriented group:



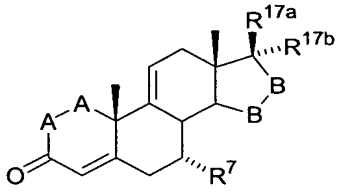
;

R^7 is selected from the group consisting of hydrogen, furyl, and alkylfuryl;

R^{17c} is hydroxy or protected hydroxy; and

R^{17d} is alkenyl;

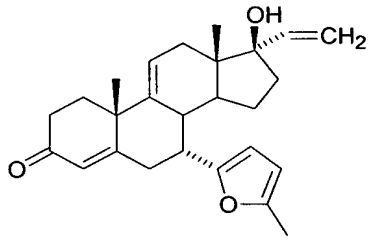
the process comprising contacting a source of hydrogen in the presence of a catalyst with a compound of Formula XXVIA:



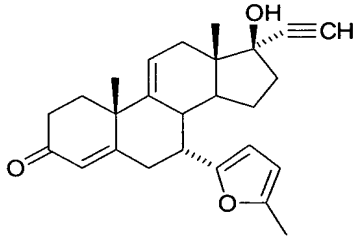
XXVIA

wherein -A-A-, -B-B-, and R^7 are as defined above; R^{17a} is hydroxy or protected hydroxy; and R^{17b} is alkynyl.

112. The process of claim 111 wherein said compound of Formula XXVIA is:

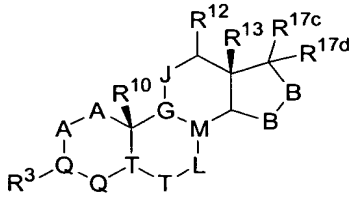


and the compound of Formula XXVIIA is:



.

113. A compound corresponding to Formula XXII



XXII

wherein:

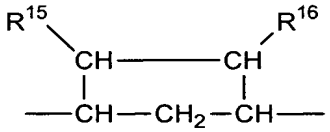
R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

R^{10}, R^{12} and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^1 and R^2 together with the carbons of the steroid backbone to which they are attached form a (saturated) cycloalkylene group;

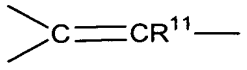
-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}$ or an α- or β-oriented group:



where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-G-J- represents the group

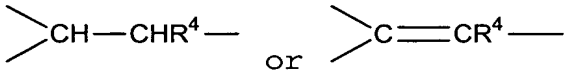


;

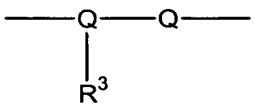
where R^{11} is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy,

acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

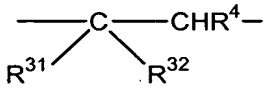
-Q-Q- represents the group



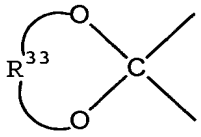
where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; or



together represent the group

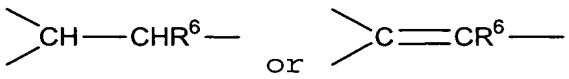


where R^{31} and R^{32} are independently selected from the group consisting of hydroxy and alkoxy, or R^{31}, R^{32} and the C-3 carbon of the steroid nucleus to which they are attached from the group



where R^{33} is alkylene.

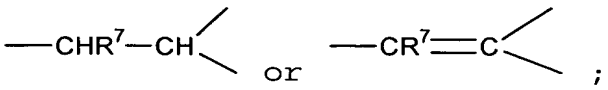
-T-T- represents the group



where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl,

alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

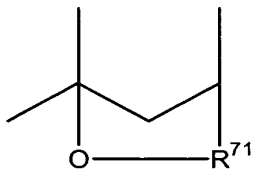
-L-M- represents the group



where R^7 is selected from the group consisting of hydrogen, halo, hydroxy, protected hydroxy, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, heteroaryl, heterocyclyl, acetylthio, furyl and substituted furyl;

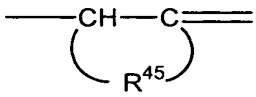
or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a cycloalkylene group;

or R^5 and R^7, together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



wherein R^{71} comprises =CH(OH), =CH(OR^{72}) or =CH=O,

or -Q-T- represents the group



where R^{45} is alkylene;

R^{17c} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17d} is alkenyl.

114. A compound as set forth in claim 113 wherein, when R^3 is methyl, R^{11} is hydrogen, R^{17c} is β-hydroxy and R^{17d} is α-vinyl, at least one of -A-A-, -B-B-, and -T-L- is not $-CH_2-CH_2-$.

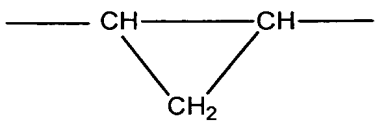
115. A compound as set forthin claim 114 wherein, when R^{17c} is hydroxy and R^{17d} is vinyl, at least one of -A-A-, -B-B- and -T-L- is not $-CH_2-CH_2-$.

116. A compound as set forth in claim 114 wherein at least one of -A-A-, -B-B- and -T-L- is not $-CH_2-CH_2-$.

117. A compound as set forth in claim 116 wherein -B-B- is cycloalkylene.

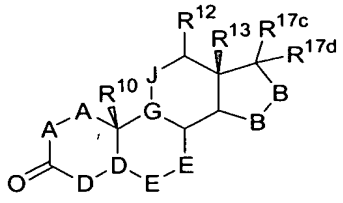
118. A compound as set forth in claim 117 wherein -T-L- is cycloalkylene.

119. A compound as set forth in claim 117 wherein each of -B-B- and -T-L- is



120. A compound as set forth in claim 114 where R^7 is acetylthio.

121. A compound corresponding to Formula XXV



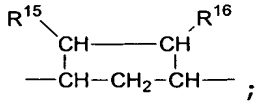
XXV

wherein R^{10}, R^{12} and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

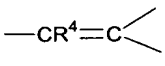
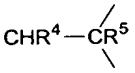
where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}-$, or an α- or β-oriented group:



;

where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy, or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a cycloalkylene group;

-D-D- represents the group  or  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl,

cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group $>C=CR^{11}-$;

where R^9 and R^{11} are independently and is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

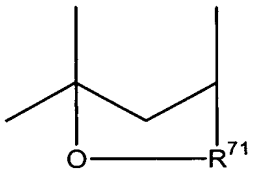
-E-E- represents the group $-CR^6=CR^7-$, or $-CHR^6-CHR^7-$;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy;

R^7 is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl, thienyl, substituted furyl and substituted thienyl;

or or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which R^{15} and R^{16} are respectively attached, form a (saturated) cycloalkylene group;

or R^5 and R^7, together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



wherein R^{71} comprises =CH(OH), =CH(OR^{72}) or =CH=O,

R^{17c} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17d} is alkenyl.

122. A compound as set forth in claim 121 wherein when R^3 is methyl, R^{11} is hydrogen, R^{17c} is β-hydroxy and R^{17d} is
α-vinyl, at least one of -A-A-, -B-B-, and -E-E- is not $-CH_2-CH_2-$.

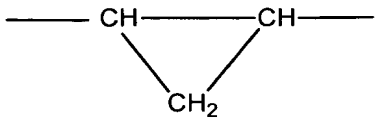
123. A compound as set forth in claim 122 wherein, when R^{17c} is hydroxy and R^{17d} is vinyl, at least one of -A-A-, -B-B-, and -E-E- is not $-CH_2-CH_2-$.

124. A compound as set forth in claim 123 wherein at least one of -A-A-, -B-B- and -E-E- is not $-CH_2-CH_2-$.

125. A compound as set forth in claim 124 wherein -B-B- is cycloalkylene.

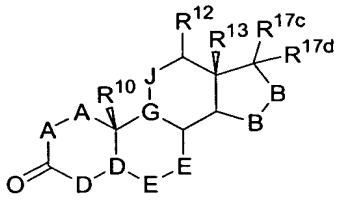
126. A compound as set forth in claim 125 wherein -E-E- is cycloalkylene.

127. A compound as set forth in claim 126 wherein each of -B-B- and -E-E- is



128. A compound as set forth in claim 122 wherein R^7 is acetylthio.

129. A compound corresponding to Formula XXIV



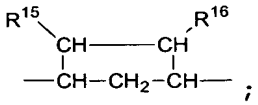
XXIV

wherein R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

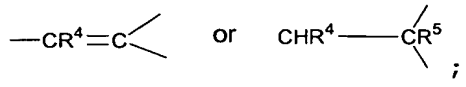
where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}-$ or an α- or β-oriented group:

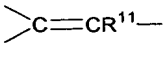


where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy,

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-D-D- represents the group  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group  ;

where R^{11} is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

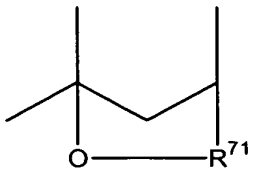
-E-E- represents the group $-CR^6=CR^7-$ or $-CHR^6-CHR^7-$;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

R^7 is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl and substituted furyl,

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which R^6 and R^7 are respectively attached, form a (saturated) cycloalkylene group;

or R^5 and R^7, together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



wherein R^{71} comprises =CH(OH), =CH(OR^{72}) or =CH=O,

R^{17a} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17b} is alkynyl.

130. A compound as set forth in claim 129 wherein, when R^3 is methyl, R^{11} is hydrogen, R^{17a} is β-hydroxy and R^{17b} is α-ethynyl, at least one of -A-A-, -B-B- and -E-E- is not $-CH_2-CH_2-$.

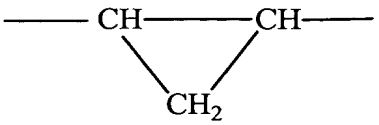
131. A process as set forth in claim 130 wherein, when R^{17a} is hydroxy and R^{17b} is ethynyl, at least one of -A-A-,
-B-B- and -E-E- is not $-CH_2-CH_2-$.

132. A compound as set forth in claim 129 wherein at least one of -A-A-, -B-B- and -E-E- is not $-CH_2-CH_2-$.

133. A compound as set forth in claim 130 wherein -B-B- is cycloalkylene.

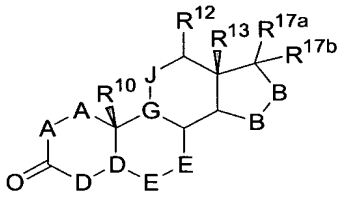
134. A compound as set forth in claim 133 wherein -E-E- is cycloalkylene.

135. A compound as set forth in claim 134 wherein each of -B-B- and -T-L- is



136. A compound as set forth in claim 130 where R^7 is acetylthio.

137. A compound corresponding to Formula XXVI



XXVI

wherein R^{10}, R^{12} and R^{13}, are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

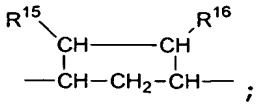
R^{17a} is hydroxy or protected hydroxy;

R^{17b} is alkynyl;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

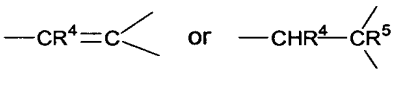
where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid nucleus to which they are attached form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}$ or an α- or β-oriented group:



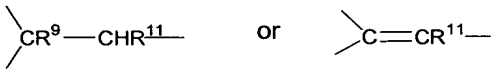
where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-D-D- represents the group  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group

 ;

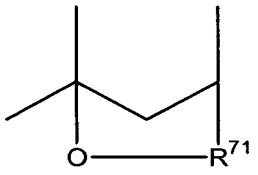
where R^9 and R^{11} are independently selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^9 and R^{11} together form an epoxy group; and

-E-E- represents the group $-CR^6=CR^7-$ or CHR^6-CHR^7-;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy, and

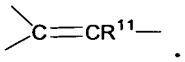
R^7 is selected from the group consisting of acetylthio, furyl and substituted furyl, or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are attached, form a cycloalkylene group;

or R^5 and R^7, together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



wherein R^{71} comprises =CH(OH), =CH(OR^{72}) or =CH=O.

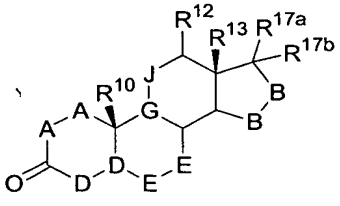
138. A compound as set forth in claim 137 wherein -G-J is



.

139. A compound as set forth in claim 137 or 138 wherein R^7 is furyl or substituted furyl.

140. A compound corresponding to Formula XXVII:



XXVII

R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

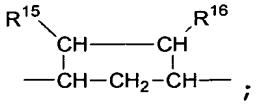
R^{17a} is selected from the group consisting of hydroxy and protected hydroxy;

R^{17b} is alkynyl;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

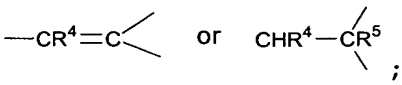
where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid backbone to which they are attached form a cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}-$ or an α- or β-oriented group:



where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

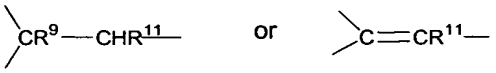
or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are attached, form a (saturated) cycloalkylene group;

-D-D- represents the group  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl,

cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group



;

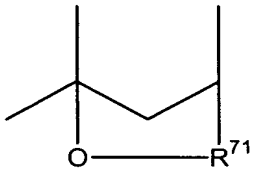
where R^9 and R^{11} are independently selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^9 and R^{11} together form an epoxy group; and

-E-E- represents the group $-CR^6=CR^7-$ or $-CHR^6-CHR^7-$;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy, and

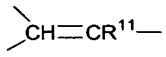
R^7 is selected from the group consisting of acetylthio, furyl, thienyl, substituted furyl or substituted thienyl, or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are attached, form a cycloalkylene group;

or R^5 and R^7, together with the C-5, C-6 and C-7 carbons of the steroid nucleus form a pentacyclic ring fused to the steroid nucleus and corresponding to the structure:



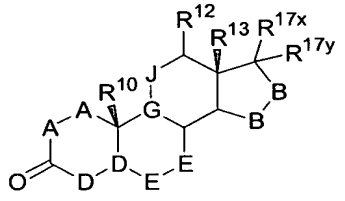
wherein R^{71} comprises =CH(OH), $=CH(OR^{72})$ or =CH=O.

141. A compound as set forth in claim 140 wherein -G-J is



142. A compound as set forth in claim 140 or 141 wherein R^7 is furyl or substituted furyl.

143. A process for the preparation of a compound corresponding to Formula J



J

wherein:

R^{10}, R^{12}, and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

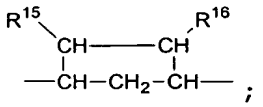
R^{17x} is selected from the group consisting of hydroxy, protected hydroxy,

R^{17y} is alkenyl or alkynyl;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

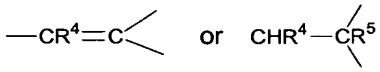
where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}-$ or an α- or β-oriented group:



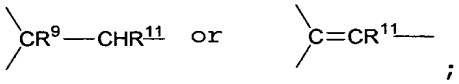
where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are attached, form a (saturated) cycloalkylene group,

-D-D- represents the group  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group



where R^{11} is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^9 and R^{11} together form an epoxy group; and

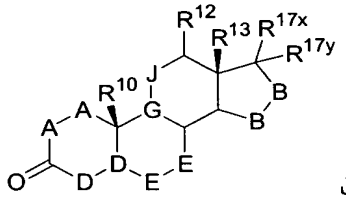
-E-E- represents the group $-CHR^6-CHR^7-$;

where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

R^7 is furyl, thienyl, substituted furyl or substituted thienyl, the process comprising:

reacting a substrate compound corresponding to Formula K with furan, substituted furan, thiophene or substituted thiophene under conditions effective for substitution of a furyl, substituted furyl, thienyl or substituted thienyl group at the 7-position on the substrate;

said compound of Formula K having the structure:



JA

wherein:

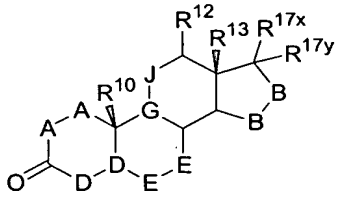
R^{10}, R^{12}, R^{13}, R^{17x} and R^{17y}, -A-A-, -D-D-, -G-J- and -B-B- are as defined above; and -E-E- is

$$——CR^6{=}CH——\ .$$

144. A process as set forth in claim 143 wherein R^{17x} is β-hydroxy and R^{17y} is selected from the group consisting of α-vinyl and α-ethynyl.

145. A process as set forth in claim 143 wherein the reaction is conducted in the presence of a Lewis acid and another acid having a pKa <5.

146. (oxidation) A process for preparation of a compound corresponding to Formula



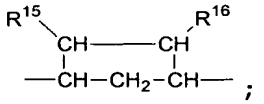
K

wherein R^{10}, R^{12} and R^{13} are independently selected from the group consisting of hydrogen, halo, hydroxy, lower alkyl, lower alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano, and aryloxy;

-A-A- represents the group $-CHR^1-CHR^2-$ or $-CR^1=CR^2-$;

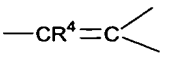
where R^1 and R^2 are independently selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, cyano, and aryloxy, or R^1 and R^2 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$, $-CR^{15}=CR^{16}-$ or an α- or β-oriented group:

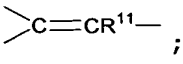


where R^{15} and R^{16} are independently selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, and aryloxy,

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a cycloalkylene group;

-D-D- represents the group  ;

where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy or R^4 and R^5 together with the carbons of the steroid backbone to which they are attached form a cycloalkyl group;

-G-J- represents the group  ;

where R^{11} is selected from the group consisting of hydrogen, hydroxy, protected hydroxy, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; and

-E-E- represents the group $-CR^6=CR^7-$;

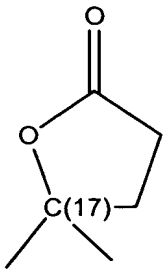
where R^6 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy.

R^7 is selected from the group consisting of hydrogen, halo, alkyl, cycloalkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano, aryloxy, acetylthio, furyl, thienyl and substituted furyl and substituted thienyl;

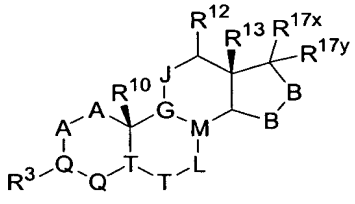
R^{17x} is selected from the group consisting of hydroxy and protected hydroxy; and

R^{17y} is alkenyl or alkynyl; or

R^{17x} and R^{17y} together form a ketal or keto group, or R^{17x} and R^{17y} together with the C-17 carbon to which they are attached form the α- or β-oriented structure:



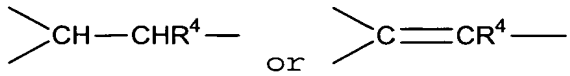
the process comprising contacting a compound of Formula KA with an oxidizing agent, said compound of Formula KA having the structure:



KA

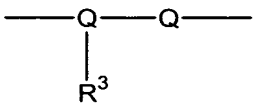
wherein R^{10}, R^{12}, R^{13}, -A-A-, -B-B-, -G-J-, R^{17x} and R^{17y} are as defined above;

-Q-Q- represents the group

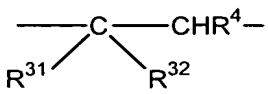


;

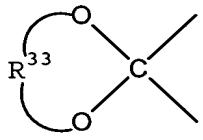
where R^4 is selected from the group consisting of hydrogen, halo, alkyl, alkoxy, acyl, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, alkoxycarbonyl, acyloxyalkyl, cyano and aryloxy; or



together represent the group

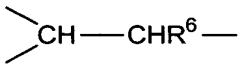


where R^{31} and R^{32} are independently selected from the group consisting of hydroxy and alkoxy, or R^{31}, R^{32} and the C-3 carbon of the steroid nucleus to which they are attached form the group



where R^{33} is alkylene.

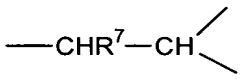
-T-T- represents the group



;

where R^6 is as set forth above;

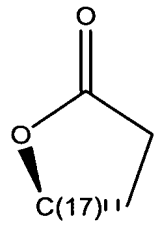
-L-M- represents the group



where R^7 is as set forth above.

147. A process as set forth in claim 146 wherein R^{17x} is β-hydroxy and R^{17y} is α-vinyl or α-ethynyl.

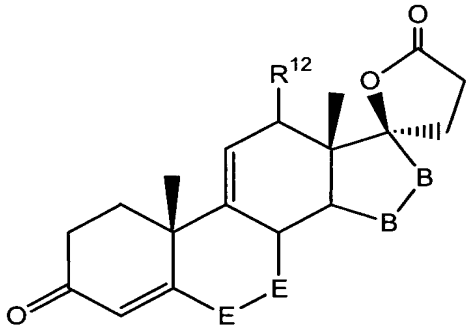
148. A process as set forth in claim 146 wherein R^{17x} and R^{17y}, together with the C-17 carbon of the steroid nucleus to which they are attached, form the group



149. A process as set forth in claim 146 wherein, when R^3 is methyl, R^{11} is β-hydroxy and R^{17y} is α-vinyl or α-ethynyl at least one of -A-A-, -B-B- and -T-L- is not $-CH_2-CH_2-$.

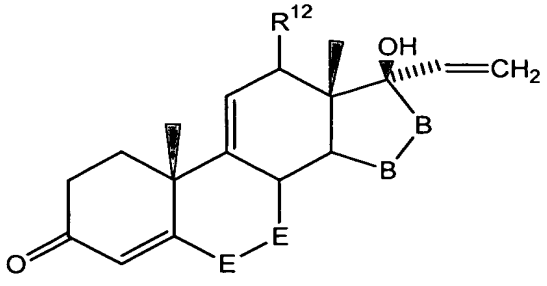
150. A process as set forth in claim 149 wherein, when R^{17x} is hydrogen and R^{17y} is vinyl or ethynyl, at least one of -A-A-, -B-B- and -T-L- is not $-CH_2-CH_2-$.

151. A process for the preparation of a compound corresponding to Formula 2001:



2001

the process comprising:
carbonylating a 17-vinyl-17-hydroxy steroid compound of Formula 2000:



2000

where

R^{12} is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-E-E- represents the group $-CHR^6-CHR^7-$; where R^6 is hydrogen;

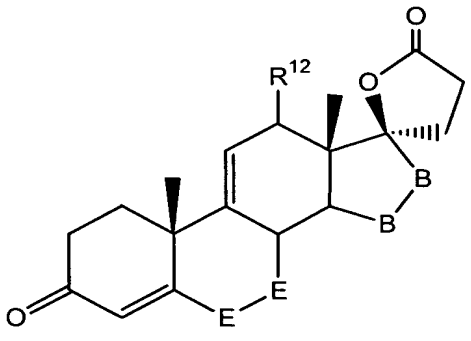
where R^7 is selected from the group consisting of hydrogen, furyl, alkylfuryl, thienyl, alkylthienyl and acetylthio;

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$; where R^{15} and R^{16} are hydrogen;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group.

152. The process of claim 151 further comprising the preparation of a compound corresponding to Formula 2002:



2002

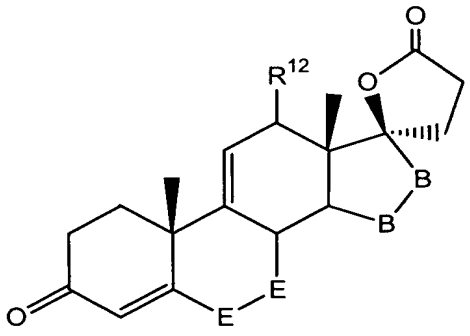
where

R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

the process comprising contacting a steroid compound corresponding to Formula 2001 where R^7 is hydrogen, with furan, alkylfuran, thiophene or alkylthiophene;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

153. The process of claim 152 further comprising the preparation of a compound corresponding to Formula 2003:



2003

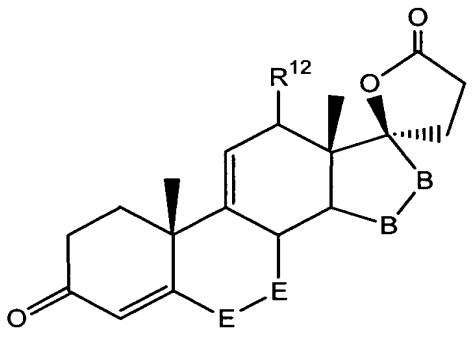
where

R^7 is -C(O)OH;

the process comprising contacting a steroid compound corresponding to Formula 2002 where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl, with an oxidizing agent and an ozonolysis agent;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

154. The process of claim 153 further comprising the preparation of a compound corresponding to Formula 2004:



2004

where

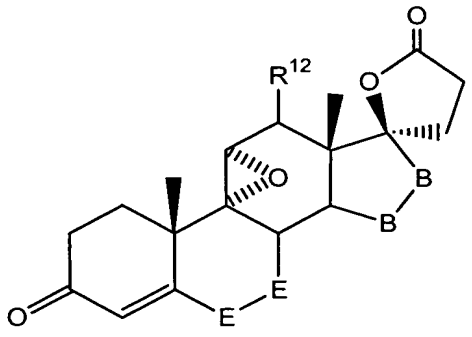
R^7 is $-C(O)OR^{71}$;

R^{71} is alkyl;

the process comprising esterifying a 7-carboxy steroid compound corresponding to Formula 2003 where R^7 is -C(O)OH;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

155. The process of claim 154 further comprising the preparation of a compound corresponding to Formula 2005:

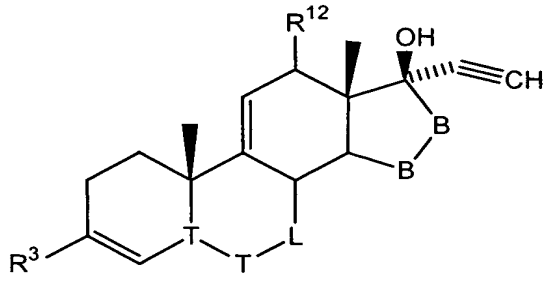


2005

the process comprising contacting the compound of Formula 204 with an epoxidation agent;

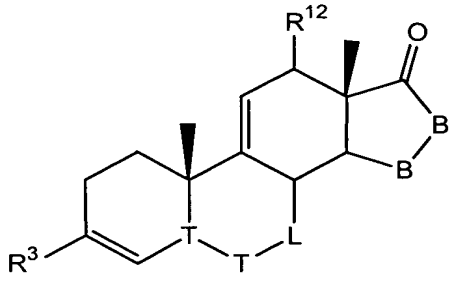
where R^{12}, -E-E- and -B-B- are defined as above in Formula 2004.

156. The process of claim 155 further comprising the preparation of a compound of Formula 1998:



1998

the process comprising ethynylating a 17-keto steroid compound of Formula 1997:



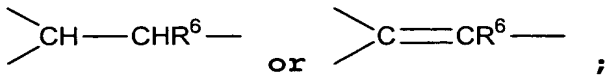
1997

where

R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

R^{12} is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-T-T- represents the group



where R^6 is hydrogen;

-T-L- represents the group $-CHR^6-CHR^7-$; where R^6 is hydrogen;

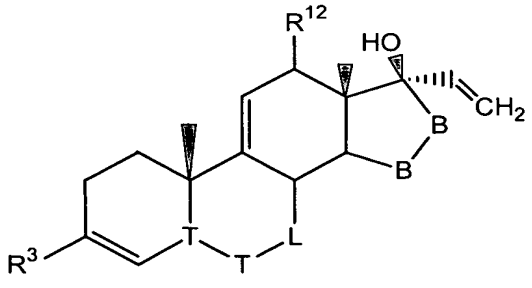
where R^7 is selected from the group consisting of hydrogen and acetylthio;

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$; where R^{15} and R^{16} are hydrogen;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group.

157. The process of claim 156 further comprising the preparation of a compound corresponding to Formula 1999:



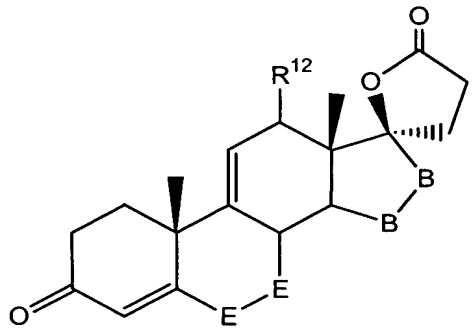
1999

where R^3, R^{12}, -T-T-, -T-L- and -B-B- are as defined in Formula 1998;

the process comprising hydrogenating a 17-ethynyl-17-hydroxy steroid compound corresponding to Formula 1998.

158. The process of claim 157 further comprising the preparation of a compound corresponding to Formula 2000, the process comprising oxidizing a steroid compound corresponding to Formula 1999.

159. The process of claim 151 further comprising the preparation of a compound corresponding to Formula 2003

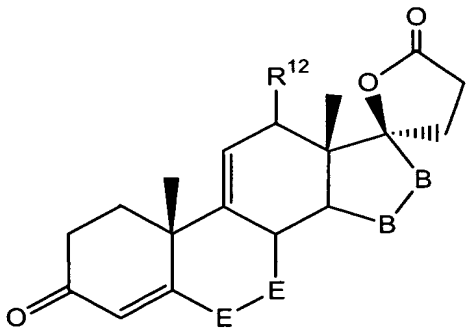


2003

where

R^7 is -C(O)OH;

the process comprising contacting a steroid compound corresponding to Formula 2002 with an oxidizing agent and an ozonolysis agent:

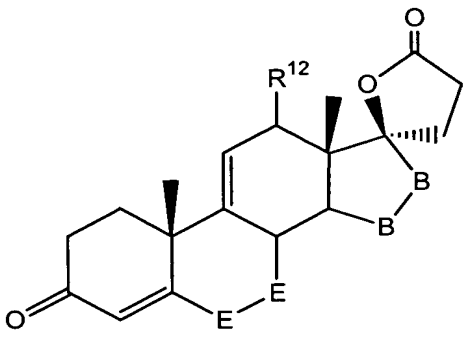


2002

where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

160. The process of claim 159 further comprising the preparation of a compound corresponding to Formula 2004:



2004

where

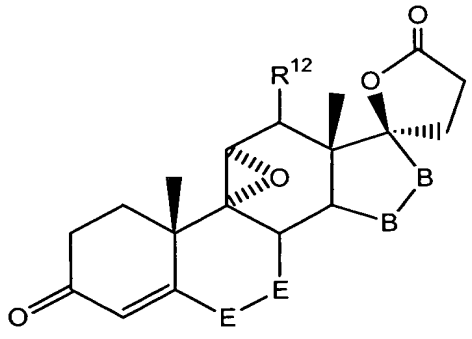
R^7 is $-C(O)OR^{71}$;

R^{71} is alkyl;

the process comprising esterifying a 7-carboxy steroid compound corresponding to Formula 2003, where R^7 is $-C(O)OH$;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

161. The process of claim 160 further comprising the preparation of a compound corresponding to Formula 2005:



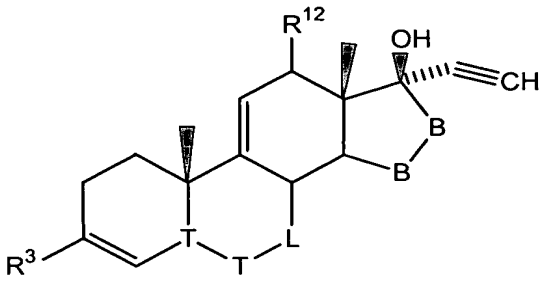
2005

where R^{12}, -E-E- and -B-B- are defined as above in

Formula 2004;

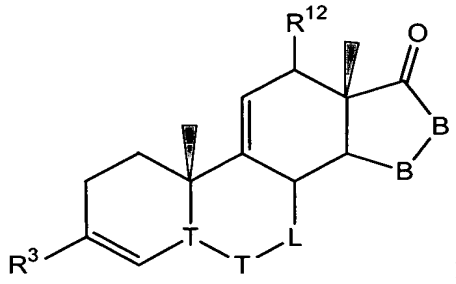
the process comprising contacting the compound of Formula 204 with an epoxidation agent.

162. The process of claim 161 further comprising the preparation of a compound corresponding to Formula 1998:



1998

the process comprising ethynylating a 17-keto steroid compound of Formula 1997:



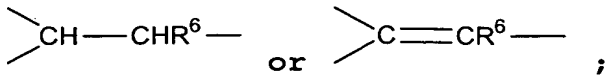
1997

where

R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

R^{12} is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-T-T- represents the group



where R^6 is hydrogen;

-T-L- represents the group $-CHR^6-CHR^7-$; where R^6 is hydrogen;

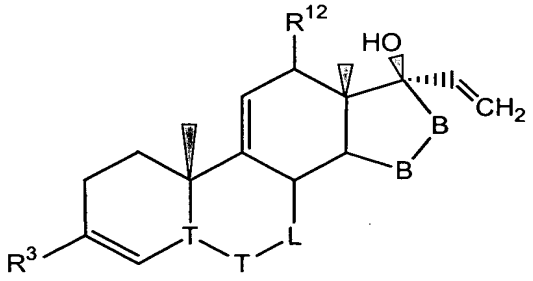
where R^7 is selected from the group consisting of hydrogen and acetylthio;

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$; where R^{15} and R^{16} are hydrogen;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group.

163. The process of claim 162 further comprising the preparation of a compound corresponding to Formula 1999:



1999

where R^3, R^{12}, -T-T-, -T-L- and -B-B- are as defined in Formula 1998;

the process comprising hydrogenating a 17-ethynyl-17-hydroxy steroid compound corresponding to Formula 1998.

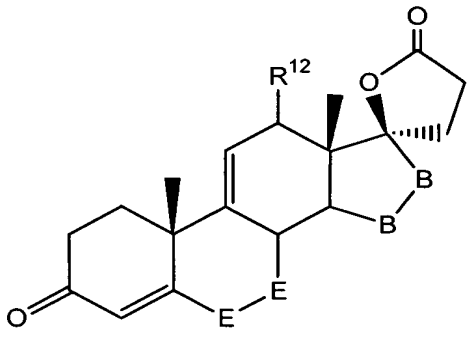
164. The process of claim 163 further comprising the preparation of a compound corresponding to Formula 2000,

the process comprising oxidizing a steroid compound corresponding to Formula 1999.

165. The process of claim 164 further comprising the preparation of a compound corresponding to Formula 2000, where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

the process comprising contacting a 17-vinyl-17-hydroxy steroid compound corresponding to Formula 2000 where R^7 is hydrogen, with furan, alkylfuran, thiophene or alkylthiophene.

166. The process of claim 151 further comprising the preparation of a compound corresponding to Formula 2003

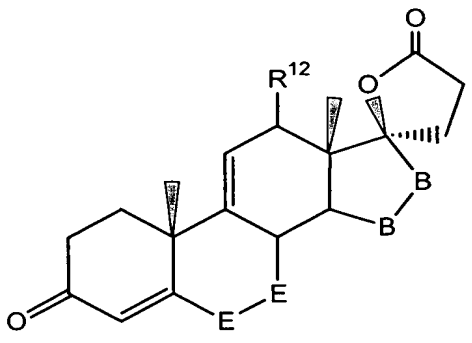


2003

where

R^7 is -C(O)OH;

the process comprising contacting a steroid compound corresponding to Formula 2002 with an oxidizing agent and an ozonolysis agent:

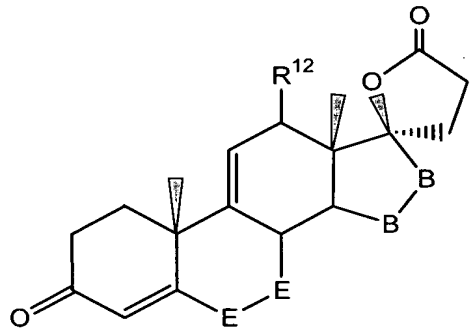


2002

where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

167. The process of claim 166 further comprising the preparation of a compound corresponding to Formula 2004:



2004

where

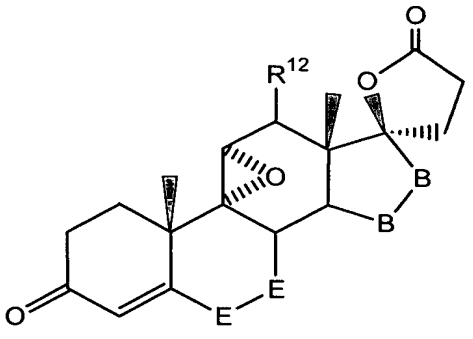
R^7 is $-C(O)OR^{71}$;

R^{71} is alkyl;

the process comprising esterifying a 7-carboxy steroid compound corresponding to Formula 2003 where R^7 is -C(O)OH;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

168. The process of claim 167 further comprising the preparation of a compound corresponding to Formula 2005:

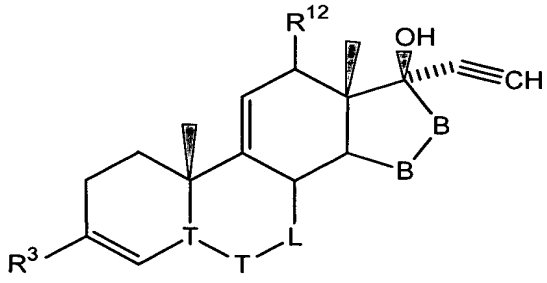


2005

where R^{12}, -E-E- and -B-B- are defined as above in Formula 2004;

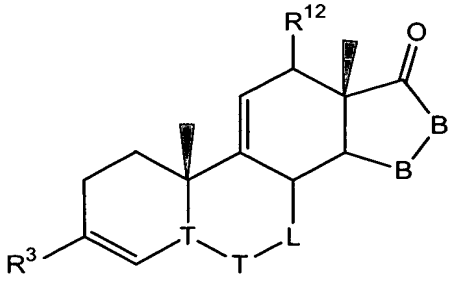
the process comprising contacting the compound of Formula 204 with an epoxidation agent.

169. The process of claim 168 further comprising the preparation of a compound corresponding to Formula 1998:



1998

the process comprising ethynylating a 17-keto steroid compound of Formula 1997:



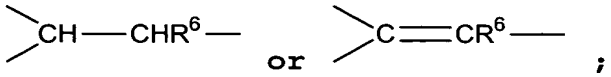
1997

where

R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

R^{12} is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-T-T- represents the group



;

where R^6 is hydrogen;

-T-L- represents the group $-CHR^6-CHR^7-$; where R^6 is hydrogen;

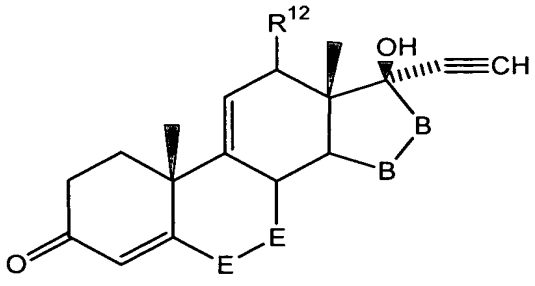
where R^7 is selected from the group consisting of hydrogen and acetylthio;

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$; where R^{15} and R^{16} are hydrogen;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group.

170. The process of claim 169 further comprising the preparation of a compound corresponding to Formula 2499:

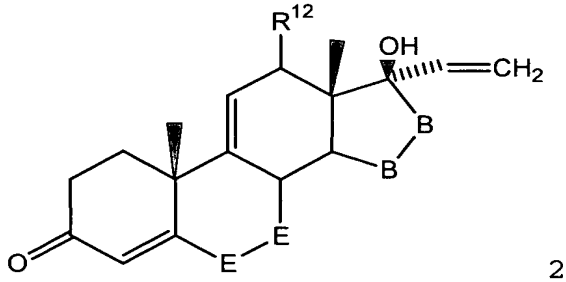


2499

where R^{12}, -E-E- and -B-B- are as defined in Formula 2001;

the process comprising oxidizing a steroid compound corresponding to Formula 1998.

171. The process of claim 170 further comprising the preparation of a compound corresponding to Formula 2000:



2000

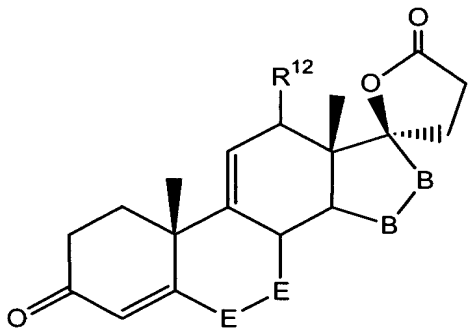
the process comprising hydrogenating a 17-ethynyl-17 hydroxy steroid compound corresponding to Formula 2499;

where R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

172. The process of claim 171 further comprising the preparation of a compound corresponding to Formula 2000 where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

the process comprising contacting a compound corresponding to Formula 2000 where R^7 is hydrogen with furan, alkylfuran, thiophene or alkylthiophene.

173. The process of claim 151 further comprising the preparation of a compound corresponding to Formula 2002:



2002

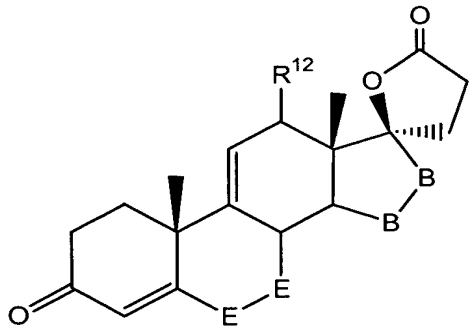
where

R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

the process comprising contacting a 17-lactone steroid compound corresponding to Formula 2001 where R^7 is hydrogen, with furan, alkylfuran, thiophene or alkylthiophene;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

174. The process of claim 173 further comprising the preparation of a compound corresponding to Formula 2003:



2003

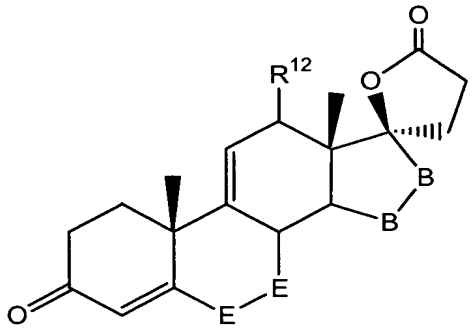
where

R^7 is -C(O)OH;

the process comprising contacting a steroid compound corresponding to Formula 2002 where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl, with an oxidizing agent and an ozonolysis agent;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

175. The process of claim 174 further comprising the preparation of a compound corresponding to Formula 2004:



2004

where

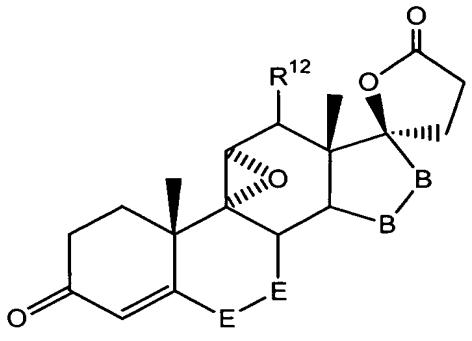
R^7 is $-C(O)OR^{71}$;

R^{71} is alkyl;

the process comprising esterifying a 7-carboxy steroid compound corresponding to Formula 2003 where R^7 is -C(O)OH;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

176. The process of claim 175 further comprising the preparation of a compound corresponding to Formula 2005:

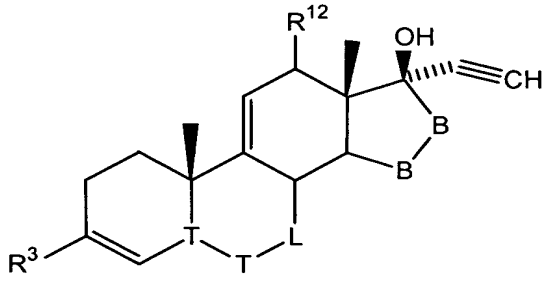


2005

where R^{12}, -E-E- and -B-B- are defined as above in Formula 2004;

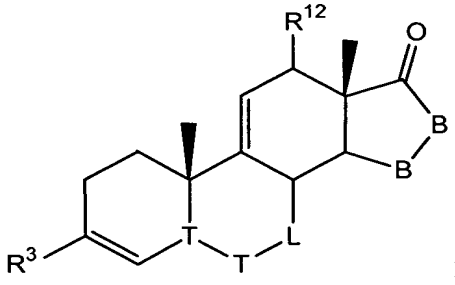
the process comprising contacting the compound of Formula 204 with an epoxidation agent.

177. The process of claim 176 further comprising the preparation of a compound corresponding to Formula 1998:



1998

the process comprising ethynylating a 17-keto steroid compound of Formula 1997:



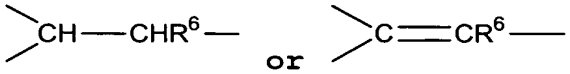
1997

where

R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

R^{12} is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-T-T- represents the group



;

where R^6 is hydrogen;

-T-L- represents the group $-CHR^6-CHR^7-$; where R^6 is hydrogen;

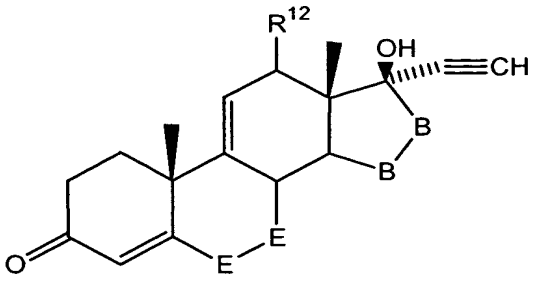
where R^7 is selected from the group consisting of hydrogen and acetylthio;

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$; where R^{15} and R^{16} are hydrogen;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group.

178. The process of claim 177 further comprising the preparation of a compound corresponding to Formula 2499:

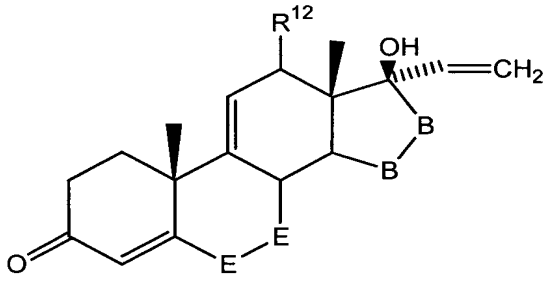


2499

where R^{12}, -E-E- and -B-B- are as defined in Formula 2001;

the process comprising oxidizing a steroid compound corresponding to Formula 1998.

179. The process of claim 178 further comprising the preparation of a compound corresponding to Formula 2000:

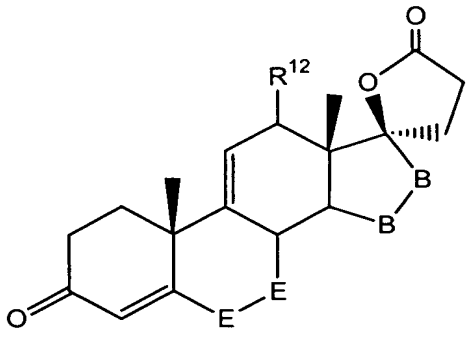


2000

the process comprising hydrogenating a 17-ethynyl-17 hydroxy steroid compound corresponding to Formula 2499;

where R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

180. The process of claim 151 further comprising the preparation of a compound corresponding to Formula 2003:

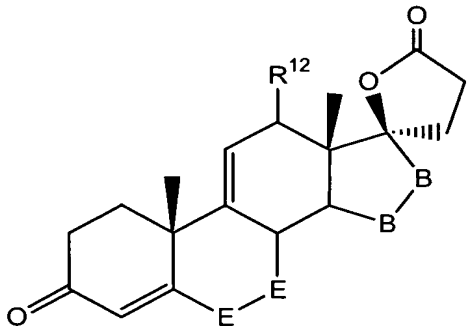


2003

where

R^7 is -C(O)OH;

the process comprising contacting a 17-lactone steroid compound corresponding to Formula 2002 with an oxidizing agent and an ozonolysis agent:

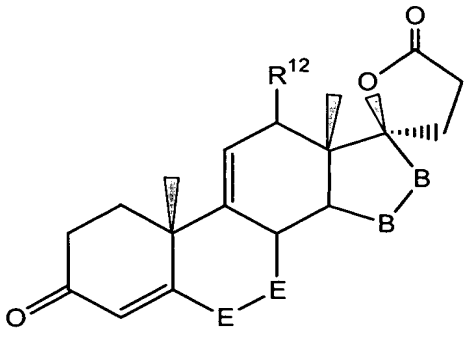


2002

where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

181. The process of claim 180 further comprising the preparation of a compound corresponding to Formula 2004:



2004

where

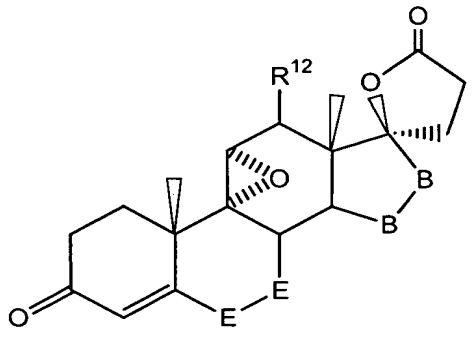
R^7 is $-C(O)OR^{71}$;

R^{71} is alkyl;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001;

the process comprising esterifying a 7-carboxy steroid compound corresponding to Formula 2003 where R^7 is $-C(O)OH$.

182. The process of claim 181 further comprising the preparation of a compound corresponding to Formula 2005:

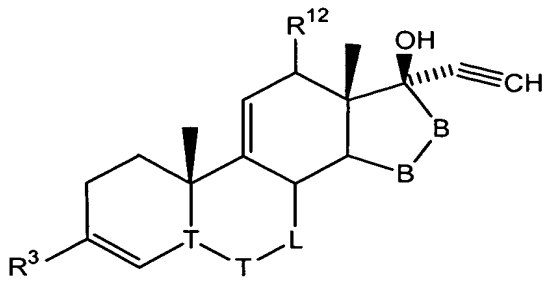


2005

where R^{12}, -E-E- and -B-B- are defined as above in Formula 2004;

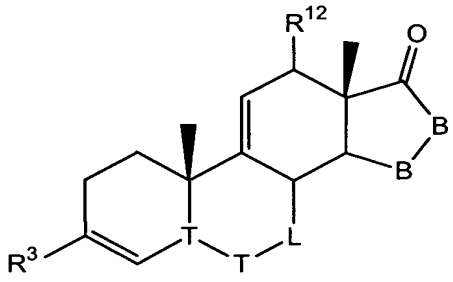
the process comprising contacting the compound of Formula 204 with an epoxidation agent.

183. The process of claim 182 further comprising the preparation of a compound corresponding to Formula 1998:



1998

the process comprising ethynylating a 17-keto steroid compound of Formula 1997:



1997

where

R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

R^{12} is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-T-T- represents the group

;

where R^6 is hydrogen;

-T-L- represents the group $-CHR^6-CHR^7-$; where R^6 is hydrogen;

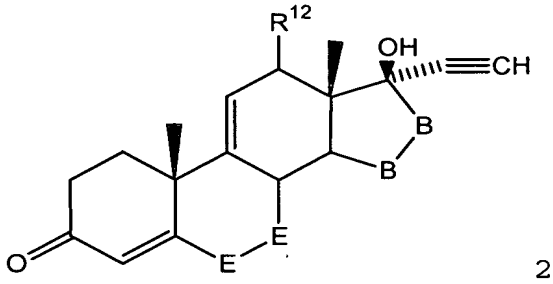
where R^7 is selected from the group consisting of hydrogen and acetylthio;

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$; where R^{15} and R^{16} are hydrogen;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group.

184. The process of claim 183 further comprising the preparation of a compound corresponding to Formula 2499:



2499

where R^{12}, -E-E- and -B-B- are as defined in Formula 2001;

the process comprising oxidizing a steroid compound corresponding to Formula 1998.

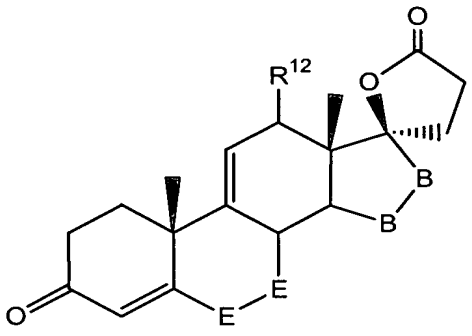
185. The process of claim 184 further comprising the preparation of a compound corresponding to Formula 2499 where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

the process comprising contacting a compound corresponding to Formula 2499 where R^7 is hydrogen with furan, alkylfuran, thiophene or alkylthiophene.

186. The process of claim 185 further comprising the preparation of a compound corresponding to Formula 2000 where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

the process comprising hydrogenating a 17-ethynyl-17-hydroxy steroid compound corresponding to Formula 2499 where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl.

187. The process of claim 151 further comprising the preparation of a compound corresponding to Formula 2003:

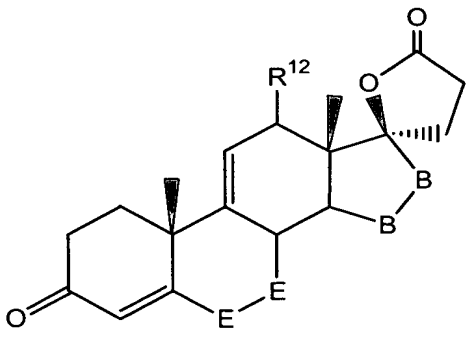


2003

where

R^7 is -C(O)OH;

the process comprising contacting a steroid compound corresponding to Formula 2002 with an oxidizing agent and an ozonolysis agent:

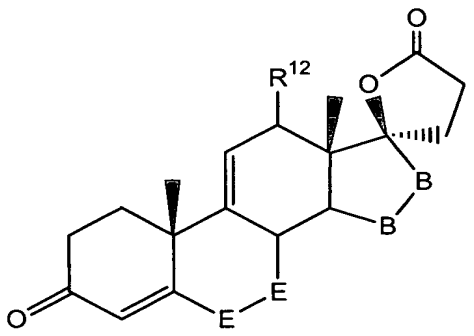


2002

where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

188. The process of claim 187 further comprising the preparation of a compound corresponding to Formula 2004:



2004

where

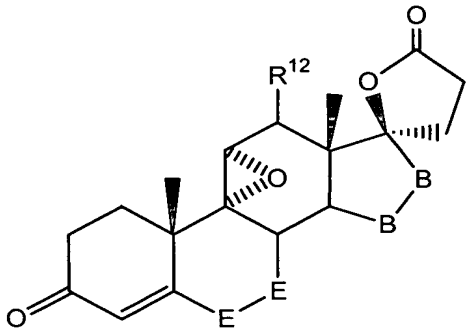
R^7 is $-C(O)OR^{71}$;

R^{71} is alkyl;

the process comprising esterifying a 7-carboxy steroid compound corresponding to Formula 2003 where R^7 is $-C(O)OH$;

R^{12}, -E-E- and -B-B- are as defined above for Formula 2001.

189. The process of claim 188 further comprising the preparation of a compound corresponding to Formula 2005:

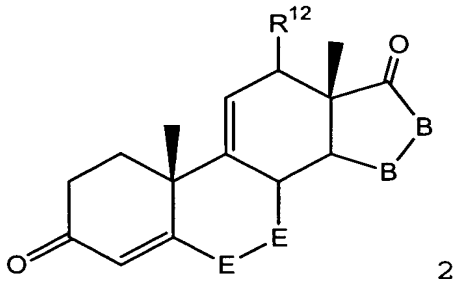


2005

where R^{12}, -E-E- and -B-B- are defined as above in Formula 2004;

the process comprising contacting the compound of Formula 204 with an epoxidation agent.

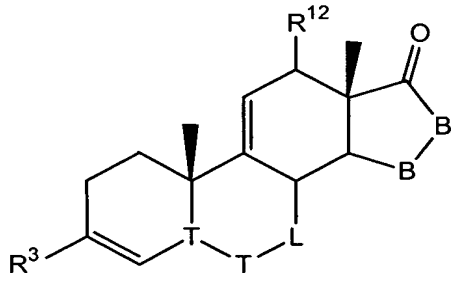
190. The process of claim 189 further comprising the preparation of a compound corresponding to Formula 2797:



2797

where R^{12}, -E-E- and -B-B- are as defined above for Formula 2001;

the process comprising oxidizing a steroid compound corresponding to Formula 1997:



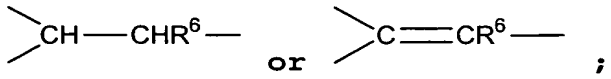
1997

where

R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

R^{12} is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-T-T- represents the group



where R^6 is hydrogen;

-T-L- represents the group $-CHR^6-CHR^7-$; where R^6 is hydrogen;

where R^7 is selected from the group consisting of hydrogen and acetylthio;

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

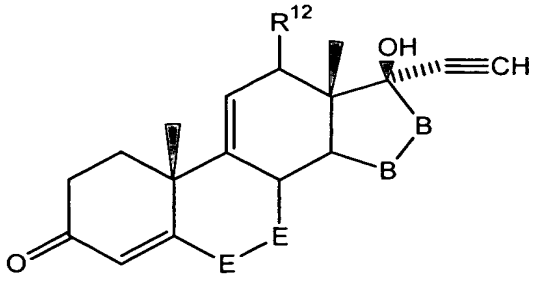
-B-B- represents the group $-CHR^{15}-CHR^{16}-$; where R^{15} and R^{16} are hydrogen;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group.

191. The process of claim 190 further comprising the preparation of a compound corresponding to Formula 2797 where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

the process comprising contacting a 17-keto steroid compound corresponding to Formula 2797 where R^7 is hydrogen with furan, alkylfuran, thiophene or alkylthiophene.

192. The process of claim 191 further comprising the preparation of a compound corresponding to Formula 2499:



2499

where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

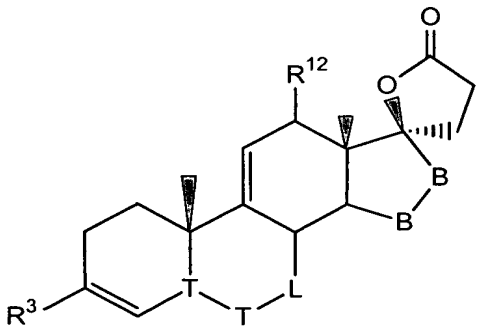
R^{12}, -E-E- and -B-B- are as defined in Formula 2000;

the process comprising ethynylating a 17-keto steroid compound of Formula 1997.

193. The process of claim 192 further comprising the preparation of a compound corresponding to Formula 2000 where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl;

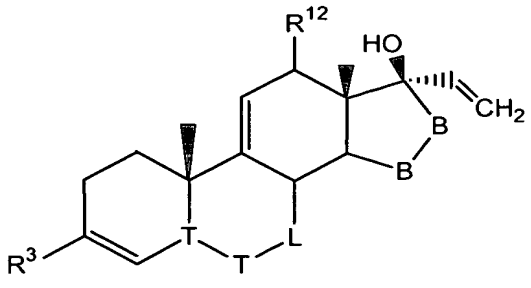
the process comprising hydrogenating a 17-ethynyl-17-hydroxy steroid compound of Formula 2499 where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl and alkylthienyl.

194. A process for the preparation of a compound corresponding to Formula 1001:



_1001

the process comprising carbonylating a 17-vinyl-17-hydroxy steroid compound of Formula 1000:



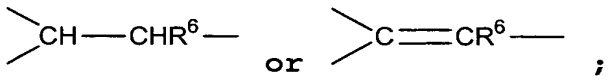
1000

wherein

R^3 is selected from the group consisting of hydrogen, hydroxy, alkoxy, hydroxyalkyl, alkoxyalkyl and hydroxycarbonyl, dihydrocarbylamino, di(substituted hydrocarbyl)amino and N-heterocyclyl;

R^{12} is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-T-T- represents the group



;

where R^6 is hydrogen;

-T-L- represents the group $-CHR^6-CHR^7-$; where R^6 is hydrogen;

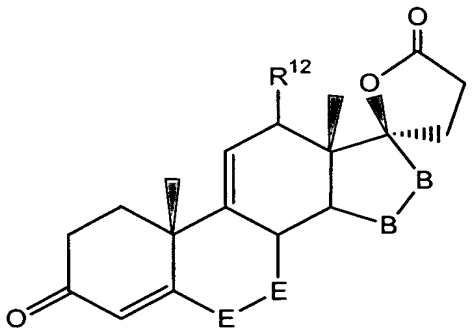
where R^7 is selected from the group consisting of hydrogen and acetylthio;

or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$; where R^{15} and R^{16} are hydrogen;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group.

195. The process of claim 194 further comprising the preparation of a compound corresponding to Formula 1002:



1002

where

R^{12} is selected from the group consisting of hydrogen, halo, hydroxy, alkyl, alkoxy, hydroxyalkyl, alkoxyalkyl, hydroxycarbonyl, cyano and aryloxy;

-E-E- represents the group $-CHR^6-CHR^7-$; where R^6 is hydrogen;

where R^7 is selected from the group consisting of hydrogen and acetylthio;

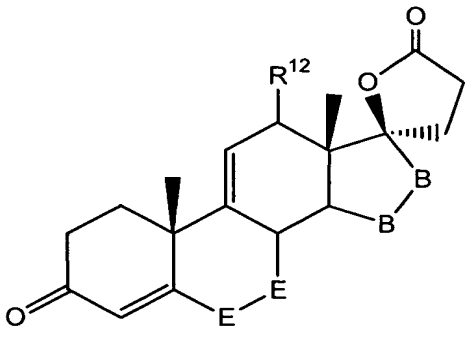
or R^6 and R^7, together with the C-6 and C-7 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

-B-B- represents the group $-CHR^{15}-CHR^{16}-$; where R^{15} and R^{16} are hydrogen;

or R^{15} and R^{16}, together with the C-15 and C-16 carbons of the steroid nucleus to which they are respectively attached, form a (saturated) cycloalkylene group;

the process comprising oxidizing a steroid compound of Formula 1001.

196. The process of claim 195 further comprising the preparation of a compound of Formula 1003:



1003

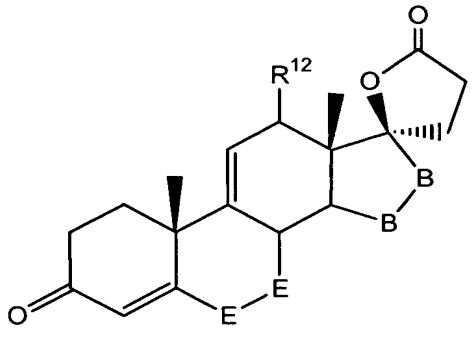
where

R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl, and alkylthienyl;

the process comprising contacting a compound of Formula 1002 where R^7 is hydrogen, with furan, alkylfuran, thiophene or alkylthiophene;

R^{12}, -E-E- and -B-B- are defined as in Formula 102 above.

197. The process of claim 196 further comprising preparation of a compound of Formula 1004:



1004

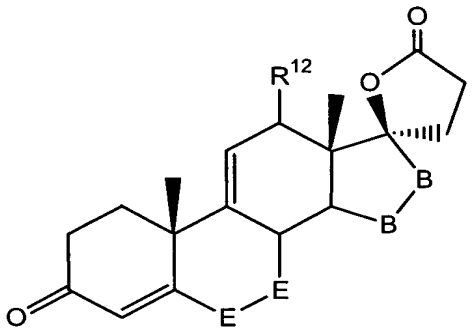
where

R^7 is -C(O)OH;

the process comprising contacting the compound of formula 1003 where R^7 is selected from the group consisting of furyl, alkylfuryl, thienyl, and alkylthienyl; with an oxidizing agent and an ozonolysis agent;

R^{12}, -E-E- and -B-B- are defined as in Formula 103 above.

198. The process of claim 197 further comprising the preparation of a compound of Formula 1005:



1005

where

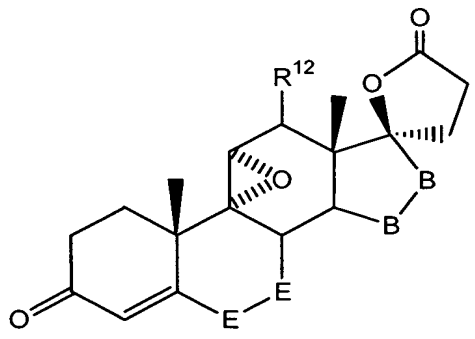
R^7 is $-C(O)OR^{71}$;

R^{71} is an alkyl group;

the process comprising esterifying a 7-carboxyl steroid compound of Formula 1004 where R^7 is -C(O)OH;

R^{12}, -E-E- and -B-B- are defined as in Formula 104 above.

199. The process of claim 198 further comprising preparation of a compound of Formula 1006

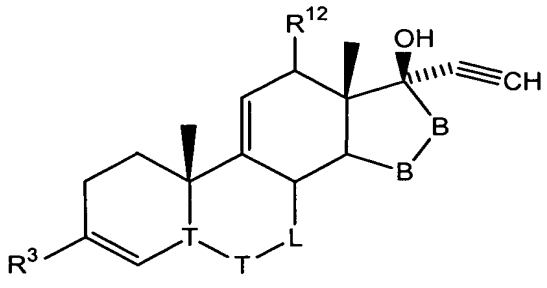


1006

R^{12}, -B-B- and -E-E are defined as in Formula 105 above;

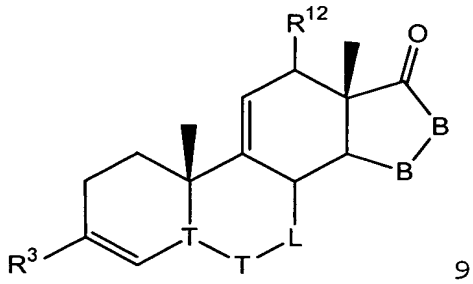
the process comprising contacting the compound of Formula 1005 with an epoxidation agent.

200. The process of claim 199 further comprising preparation of a compound of Formula 999:



999

the process comprising ethynylating a 17-keto steroid compound of Formula 1997:



998

where R^3, R^{12}, -T-T-, -T-L- and -B-B- are as defined in Formula 1001.

201. The process of claim 200 further comprising preparation of a compound of Formula 1000, the process comprising hydrogenating a compound of Formula 999.